

ALASKA DEPARTMENT OF FISH AND GAME
DIVISION OF COMMERCIAL FISHERIES

ANNUAL SALMON MANAGEMENT REPORT

1978

KUSKOKWIM DISTRICT

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PREFACE

This report presents all available information concerning the management of commercial and subsistence salmon fisheries in the Kuskokwim district. Although data from many special research projects are included in this report, complete documentation of these projects and results will be presented in separate reports. All catch data tables are based upon field data.

Data presented in this report supercedes information found in previous management reports. An attempt has been made to correct errors in previous reports and previously unrecorded data have been incorporated into this report which are so indicated by appropriate footnotes.

This report is organized into the following major sections:

1. District Introduction. This is a general and brief description of the area, inhabitants, fishery resources, fisheries and management practices.
2. District Summary. This section summarizes current year data for the area and makes comparisons with previous years.
3. Subdistrict Reports. There are several unique and separate fisheries in the district and separate comprehensive reports are presented for each.

In order to facilitate use of this report, the tabular data has been separated into current year tables and appendix tables where annual comparisons are made. The text for each major section is followed by current year tables and then appendix tables.

The following is an explanation of how effort and catch per unit effort data, presented throughout this report, have been derived. Total boat (or fisherman) hours are computed by arbitrarily assuming that if a fishing boat delivers in any 24 hour fishing period, it fished the entire period. If the period was more than 24 hours long, then the vessel is assumed to have fished the complete period for as many hours as was open to commercial fishing.

Catch per fisherman (or boat) hour is obtained by dividing the total fisherman hours into the catch for the corresponding period of time.

Total fishermen (or boats) is the total number of fishermen making deliveries, irrespectively of how many deliveries made or days fished during a particular "season". There are a number of fishermen who deliver only once or twice during the entire season.

"Total days fished" is the total number of hours open for commercial fishing during the season divided by 24.

Commercial catch information presented for the current year is derived from field data and not from finalized computer tabulations. Commercial catch data through 1975 are derived from final computer tabulations.

KUSKOKWIM DISTRICT

INTRODUCTION

District and Subdistrict Boundaries

The Kuskokwim district includes all waters of the Kuskokwim River drainage and all waters of Alaska between Cape Newenham and the Naskonat Peninsula. The present commercial salmon fishing area is divided into four subdistricts: subdistrict 1 (lower Kuskokwim River from Eek Island to Mishevik Slough below Tuluksak); subdistrict 2 (middle Kuskokwim River from Mishevik Slough to the Kolmakof River near Aniak); subdistrict 4 (approximately five miles of shoreline adjacent to the village of Quinhagak); and subdistrict 5 (Goodnews Bay). Subdistrict 3 (upper Kuskokwim River above the Kolmakof River) has been closed to commercial fishing since 1966 Figure 1. Table 1 shows the relative distances, in river miles, from three sites on the Kuskokwim River to various locations in the district.

Fishery Resources

All five species of Pacific salmon are indigenous to the district: i.e. chinook or "king" salmon (Oncorhynchus tshawytscha), sockeye or "red" salmon (O. nerka), coho or "silver" salmon (O. kisutch), pink or "humpback" salmon (O. gorbuscha) and chum or "dog" salmon (O. keta). The largest population of kings, chums and cohos are found in the Kuskokwim River drainage, while reds and pinks are more numerous in the Kanektok and Goodnews Rivers.

Other important species common to the district include: inconnu or "sheefish" (Stenodus leucichthys) several species of whitefish and cisco (Coregonus sp.), Alaska blackfish (Dallia pectoralis), northern pike (Esox lucius) and burbot or "lush" (Lota lota). Additional species are listed in Table 2.

Commercial Fishery

Although the Kuskokwim district commercial fishery is the oldest in the AYK region with catches reported as early as 1913, commercial fishing did not mature for a half-century. For many years, small commercial mild-cure operations were conducted in or near Kuskokwim Bay while the Kuskokwim River fishery remained virtually undeveloped. During the 1930's when dog teams were intensely utilized for freight hauling, a "quasi-commercial" fishery operated in the McGrath area for the sale of dried, subsistence caught salmon for dog food. However, this fishery declined with the dog teams and the Kuskokwim district experienced little additional commercial effort until Alaska became a state more than twenty years later.

Commercial salmon fishing activity has grown significantly since statehood as district fishermen have been making the difficult transition from a subsistence culture to a cash economy. This has affected fishing effort, resulting in a tremendous expansion in fishermen numbers and in increased, sustained effort. Fishing vessels have remained virtually unchanged over the years, but increased utilization of highly mobile

nylon drift nets has greatly improved the efficiency of the fleet. Of course, the overall expansion of the commercial fishery could not have been accomplished without improvements in processing and tendering facilities that have occurred throughout the district (Appendix Table 1).

King, red, coho, pink and chum salmon are of primary commercial significance in the Kuskokwim district. Although these fish are commercially utilized locally to some extent, the vast majority are transported from the district as a fresh or frozen product. Sheefish and whitefish are harvested incidentally to the salmon catch, however, a limited fall and winter "whitefish" is conducted to satisfy local market requirements.

Subsistence Fishery

District residents have long depended upon the fishery resources as a source of food. Until relatively recently, traditional fishing methods and materials limited the size and scope of the fishery. Spears, dip nets, fish traps, and willow or caribou strip gill nets were slowly supplanted by more efficient linen gill nets enabling the fishery to expand tremendously. Whitefish, cisco, black fish, pike, burbot, and sheefish have been historically utilized along with salmon, particularly chum salmon. Recent improvements in fishing gear, notably the introduction of nylon gill net webbing, have increased the availability and importance of king salmon since statehood. Estimated peak subsistence salmon harvest levels were reached during the 1930's coincidentally with the quasi-commercial McGrath fishery, but harvest trends indicated a continuing decline into the 1940's. Little additional catch data is available for the twenty year span prior to statehood (Appendix Table 1).

Today the dependence on fish for personal use remains as important as money realized from the commercial fishery. However, several factors, as yet not totally defined, are affecting the complexion of the subsistence fishery. These factors include:

- (1) Increasing commercialization of subsistence products.
- (2) Cultural changes of local residents.
- (3) Various State and Federal social-aid programs.

Any management of the Kuskokwim district fishery resources must take into account the growing - and changing - requirements of the subsistence fishery.

Management

The Division of Commercial Fisheries of the Alaska Department of Fish and Game is responsible for the management of the commercial and subsistence fisheries within the Kuskokwim district. The permanent staff assigned to this district includes one management biologist and two research biologists. In addition, 10-15 temporary summer employees are hired each season to assist the permanent staff in conducting various management and research studies.

The main objective of the Department's program is to manage the commercial salmon fisheries on a sustained yield basis in addition to obtaining needed information to determine the potential for commercial fisheries on under utilized species such as burbot and whitefish. Present commercial salmon fishing regulations are still relatively restrictive in order to insure that sufficient salmon are provided for subsistence fishery and spawning ground requirements.

The basic regulation that governs the commercial salmon harvest in all districts is the scheduled weekly fishing period. Commercial fishing is normally allowed from 6 to 24 hours a week during the open season, dependent upon the subdistrict and species involved. Fishing effort usually occurs during the entire run and not just during any particular segment of the run. Duration of the actual fishing period is dependent upon fishing conditions, the strength of the runs or spawning escapements as determined by special studies conducted by the Department.

Due to the vast size of the area and the turbid nature of many streams, accurate estimates of the size of salmon runs and the spawning escapements are difficult to obtain. Fishery management is also hampered by the relative lack of comparative catch and return information since all the fisheries were either initiated or expanded through regulation changes since 1961 and 1962. The management problem is further compounded by having to provide sufficient escapement after commercial fishing for the important subsistence fishery as well as for spawning purposes.

For these reasons the present commercial fishery is still considered to be somewhat experimental in nature. It has been a policy of the Alaska Department of Fish and Game to maintain recent levels of commercial utilization for a few years in order to establish definite trends in subsistence utilization and to obtain more information on the relationship between the salmon catch and return.

If there is no apparent change in run size, it is the Department's policy to increase commercial utilization once trends in declining subsistence utilization can be established. It should be pointed out that increases in commercial fishing effort and efficiency have occurred and may balance any immediate decline in subsistence utilization with the result that present regulations will be maintained or even made more restrictive.

A brief list of emergency orders and regulations promulgated during 1978 is presented in Table 3.

Regulatory changes enacted by the Alaska Board of Fisheries at their December and March meetings in Juneau and Anchorage (respectively) are shown in Table 4.

Table 5 lists special studies undertaken during 1978 and include a summary of objectives and results.

A unique problem in the area is the so-called language barrier. Many of the older native people cannot read or speak English. Therefore, the staff must use translators when conducting the many public meetings that are annually conducted throughout the area. In addition, many

special regulation notices are distributed in both the English and Eskimo languages. While it may normally take only half an hour or so to conduct a public meeting or hearing in English, it usually takes two to three times that long when Eskimo translators are used. To assist in the information and education program, a weekly fishery program is broadcasted over radio KYUK in Bethel. Additionally, the Department contributes to a weekly newspaper, The Tundra Drums.

DISTRICT SUMMARY OF THE 1978 COMMERCIAL FISHERIES

In recent years, fishermen participation levels have risen in general. The lower Kuskokwim River (subdistrict 1) and the Quinhagak area (subdistrict 4) have become the centers for most Kuskokwim district fishermen. This is due to the close proximity to the population centers and the liberal harvest goals associated with these fisheries. The subdistrict 2 (middle Kuskokwim River) and subdistrict 5 (Goodnews Bay area) fisheries have remained fairly stable in terms of the number of fishermen working in these areas. This is due to the relative remoteness of these fisheries and smaller harvest levels for these subdistricts. Appendix Table 2 shows the effort levels in each subdistrict over the past nine years.

The Kuskokwim district remains a resident fishery, as 99% of all 1978 entry permit holders were residents of the district (Table 7). These fishermen move freely between subdistricts so registration data does not correspond with the total number of fishermen who fished each subdistrict. The total number of fishermen making deliveries at least once in each subdistrict was: 335-10, 723; 335-20, 43; 335-40, 200; and 335-50, 35 (Appendix Table 2).

Entry permit holders are issued permanent registration numbers which do not change during the life of the individual fishermen. Whenever actual numbers of fishermen are given this report, they refer to data obtained from permanent registration numbers.

Commercial Catches

The 1978 commercial salmon catch of 668,211 was the largest ever recorded and was 4% above the previous record 1977 harvest. This catch also exceeded the previous five-year average of 471,351 fish (Appendix Table 1). Species composition was: 63,194 kings, 13,734 reds, 247,271 cohos, 61,968 pinks and 282,044 chum salmon (Table 8). Intense fishing effort and a better than average run put the king salmon catch at the highest level since 1970 (Appendix Tables 3 & 4). The chum salmon catch was the second largest on record, while the red salmon harvest was the fifth largest. The coho salmon harvest was the second largest ever recorded and the pink salmon catch was typically high for this "even year cycle" species. Commercial catches of all species were strongly influenced by intense, consistently high fishing effort increased fleet efficiency, and good runs of salmon.

Average 1978 salmon weights are presented in Table 9.

Buyers and Processors

Table 6 includes all buyers and processors that operated during

1978 in the district. Appendix Table 5 compares the 1978 pack to previous years and Appendix Table 6 presents the mean salmon weights and the prices paid to fishermen for the last fifteen years.

Economic Value

Commercial fishermen received approximately \$2,337,000 for their catch in 1978 (Appendix Table 7) while a minimum of \$250,000 in wages was estimated to have been earned by processing plant employees and tenderboat operators.

Enforcement

Fish and Wildlife Protection provided the best coverage of the Kuskokwim district during the 1978 season, than has been the case in the past. Coverage consisted of a two man boat crew with occasional assistance from an office piloting a Cessna 185 on floats.

Fishermen were cited for the following types of violations during the season: sale of illegally caught salmon, unmarked fishing gear, commercial fishing with no entry permit, and closed waters violations of both a subsistence and a commercial nature.

The single largest enforcement problem that has persisted for the past several years has been illegal commercial fishing in the Goodnews River. Both Fish and Game and Fish and Wildlife Protection will have to put more emphasis on this problem in the future.

As in the past, the Department of Fish and Game vigorously pursued a program of informing the public of impending closures by utilizing the local radio station, CB radio, telephone and by personal contact.

KUSKOKWIM RIVER (SUBDISTRICTS 1 & 2)

Commercial Fishery

The greatest amount of fishing effort and the largest commercial salmon catches occur within the 108-mile long Kuskokwim River subdistrict 1, (stat. area 335-10). There are 12 villages and at least 15 temporary fish camps located within the boundaries of this subdistrict. A majority of the district residents utilize the fishery resources for both commercial and subsistence purposes.

Set gill nets and drift gill nets are the legal types of commercial gear that can be operated in the Kuskokwim River. The gill nets cannot exceed 50 fathoms in length. After June 25, a six inch maximum mesh size restriction is in effect in the commercial chum salmon fishery located below the village of Napakiak.

Lower Kuskokwim River commercial fishermen operate highly mobile drift gill nets. This type of fishing is conducted by laying out 35 to 50 fathoms of gill net from a skiff and then drifting with the river current. Drift net fishing requires a section of river that is relatively free of snags. Set gill nets are not utilized to a great extent by commercial fishermen and are used mainly for subsistence fishing. Commercial set gill nets are fished in small eddies along the bank of the Kuskokwim River and larger eddies out in the main river. Set gillnetting

is done with much shorter nets, usually 5 to 15 fathoms in length, which tend to be more poorly constructed than do the drift gill nets.

Although there are no mesh size restrictions regarding nets operated in the lower subdistrict through June 25, most nets used during this time consist of 8-1/2 inch stretched mesh webbing. After June 25, a six inch stretched mesh size limitation is in effect and most nets consist of 5-1/4 - 5-1/2 inch stretched mesh. Depths of king salmon nets are restricted to a maximum of 35 meshes deep for nets over six inches in stretched mesh and a maximum of 45 meshes for nets six inches or smaller in stretched mesh measure.

Kuskokwim River skiffs are long and narrow with a high bow. Generally, boats vary from 16 to 32 feet (23-foot average) in length and 2-1/2 - 3 feet in deck width, although wider, more stable vessels are now entering the fishery. Boats are generally poor for fishing as they are unstable, too narrow for a stern roller, and the sides and stern are generally too low to carry too much of a load.

Several important regulations affecting commercial fishing efforts on the Kuskokwim River are:

- 1) Until June 26, commercial fishing periods are regulated by emergency order. This allows scheduling of the king salmon harvest throughout a greater portion of the run. This is necessary because of the intensive nature of the king salmon fishery.
- 2) Commercial fishing periods are limited to two 6-hour periods each week during the chum salmon season. This helps offset the increased effort and efficiency of the fleet and distributes the allowable harvests over a greater portion of the salmon run.
- 3) Commercial fishing is allowed only below Napakiak (the lower 72 miles of river) during the "chum salmon season" (June 26 - July 31). Only gill nets of six-inch stretch mesh or less can be operated during this time. Restricting fishing to the lower portion of the subdistrict enhances fish quality, helps prevent excessive harvest and wastage, and allows subsistence demands to be met. The gill net mesh restriction minimizes the capture of king salmon, particularly the larger, more fecund females.
- 4) Subsistence fishing is prohibited for 24 hours before and for 6 hours after each commercial fishing period in subdistrict 1 prior to June 25 and August 1 to August 31. During the "chum salmon season" (June 25 - July 31), only the lower subdistrict below Napakiak is affected. This regulation reduces the sale of illegal salmon and provides for a more even escapement distribution. It also reduces fish wastage, as subsistence fishermen are required to check their gear at regular intervals throughout the commercial fishing season.
- 5) After July 31, commercial fishing periods are regulated by emergency order. This allows fishing effort to be regulated according to the magnitude of the variable coho salmon run.

It also allows fishing time to be altered to insure maximum fishermen safety during poor weather conditions in August.

A limited commercial fishery is also conducted in the 118 mile long subdistrict 2. Commercial fishermen in this subdistrict are limited to catch quotas of 2,000 king and a combined total of 2,000 red and chum salmon and 2,000 coho salmon. The majority of commercial catches are taken in the Tuluksak-Kalskag areas, while the remainder of the subdistrict is primarily devoted to subsistence fishing. Set gill nets and drift gill nets are found in this subdistrict, however, set gill netting predominates.

King Salmon: Only since statehood have king salmon stocks been used significantly by Kuskokwim River fishermen. King salmon commercial and subsistence harvests averaged only 56,237 fish for the 10-year period 1960-1969, but increased to 73,214 during 1973-1977. Effort remained high during the 1978 season and total utilization was 81,522 fish (Appendix Table 8); this is the seventh highest number ever recorded.

Annual commercial catches ranged between 30,000 to 40,000 king salmon from 1968-1972. A guideline harvest was instituted within this range in an attempt to stabilize the fishery until additional data regarding run size and escapement was obtained. The small runs experienced during the years 1974, 1975 and 1976 may indicate the 30,000-40,000 harvest range was too optimistic. Commercial harvests since 1974 have ranged from about 19,000-35,000 and the current guideline harvest for the entire river is 22,000 fish during the "king salmon season". A few thousand additional fish are taken during later seasons when fishing is directed on other species.

The "king salmon season" in the lower subdistrict is not opened until subsistence catches indicate the early portion of the king salmon run has reached the Kalskag-Aniak area and relatively good sustained catches are being made at the Department's test fishing site at Kewgooyuk (56 river miles below Bethel). The late opening of the king salmon season helps to prevent over-harvest of the early run and gives subsistence fishermen an opportunity to begin fishing without interruption from the commercial fishery.

In 1978 the ice on the Kuskokwim River first moved on May 11, at Bethel, and the river was completely free of ice by May 19. The first reported king salmon was caught on May 18 at Bethel.

Commercial king salmon season consisted of three 6 hour and two 4 hour commercial fishing periods. The season started on June 9 and ended June 23. Fishermens' strikes limited fishing effort initially and a severe storm caused the first 4 hour fishing period to be rescheduled.

The run of king salmon in the Kuskokwim River can be characterized as strong which contributed to the overall length of the season as well as the total numbers of king salmon allowed to be taken.

Commercial fishing effort during the king salmon season in subdistrict 1 totaled 617 fishermen, a 2% increase over record 1974 levels. Fishermen hours increased to 9030, and the number of equivalent days fished was 1.08 (Appendix Table 9). The catch per vessel hour figure of 4.0 was the second highest on record.

An additional 7,414 king salmon were taken incidentally during the later chum and coho salmon seasons bringing the total commercial harvest in subdistrict 1 to approximately 43,553 fish. This was the greatest commercial catch on record and 41% above the previous 5 year average. The subdistrict 2 commercial fishery was opened for 20 hours during June 14-23 when 2,087 kings were taken. Twenty-eight fishermen made commercial landings during the 1978 king salmon season (Table 13).

An additional king salmon was harvested incidentally during the later coho salmon fishing periods. The total commercial commercial catch therefore totaled 2,088, which is the largest subdistrict 2 king salmon catch on record.

The total king salmon catch for the Kuskokwim River numbered 45,641, the largest catch on record. This is 39 above the previous 5 year combined commercial and subsistence catch (Appendix Table 8).

Data from the Department's test fishing site indicated that the king salmon run peaked about June 13 and was above average in magnitude.

Chum Salmon: Prior to 1971, chum salmon catches represented only fish taken incidentally to the king and coho salmon fisheries. A commercial chum fishery was initiated in 1971 due to several factors:

- 1) Early subsistence catch estimations during 1924-1943 indicate an average annual catch of 448,000 chum salmon, compared to an average 221,000 chum salmon taken yearly during 1960-1970. This represents a reduction of 227,000 fish per year. This subsistence harvest reduction is believed to have been largely influenced by lessening dependence on subsistence fishing.
- 2) There is a minimum of 16 known chum salmon spawning tributaries in the Kuskokwim River system. Most of these streams cannot be surveyed annually due to fund limitations and adverse stream or weather conditions. Usually, not more than three tributary streams can be adequately surveyed in any given season, but as many as 185,000 spawning chums have been counted. This indicated a significant chum salmon population.
- 3) Commercial catches were believed to be able to provide additional information regarding the size, timing and magnitude of the chum salmon run in addition to age, sex and size composition.

Total utilization figures have increased steadily since the inception of the commercial chum salmon fishery with a total of 379,705 fish being caught in 1978. This figure is 18% below the previous 1977 record harvest; it is also 5 percent below the previous 1977 record harvest; it is also 5 percent below the previous five-year average (Appendix Table 10).

The "chum salmon season" in subdistrict 1 is opened after June 25 below markers placed at the village of Napakiak. Commercial fishermen must use nets of 6-inch or smaller stretched mesh. The delayed opening dates combined with the mesh restriction minimizes incidental harvests of king salmon, while restricting commercial fishing to the lower portion of subdistrict 1 allows subsistence fishermen to meet their requirements.

The 1978 commercial chum salmon season in subdistrict 1 consisted of three 6-hour fishing periods and capped off by another 6-hour period. The season started on June 26 and ended July 13. The season catch for chum salmon was 219,615 (Tables 10-12). This was a record harvest for this season and was 20 percent above the previous five year average. Commercial fishing effort totaled 617 fishermen, 12 percent above the record 1975 level (Appendix Table 11). Catch per unit effort data for commercial catches was below average. Test fishing catches were above average.

Subdistrict 2 was not reopened for a special chum salmon period due to the numbers taken incidentally to the king harvest.

Coho Salmon:

The commercial coho salmon season in subdistrict 1 opened on August 1 with a 12 hour fishing period. Subsequent fishing periods through August 31, when the season was closed, were eight additional 12-hour fishing periods. Consistently large amounts of effort dictated a series of shorter periods rather than the long fishing periods of the past. Total effort for the season (597) was the largest in the history of the fishery.

The total coho season catch this season was 210,710 fish. This was 11 percent smaller than the previous 1977 record catch of 237,658 cohos. This year's catch was also more than 65 percent larger than the previous five year average. (Tables 10-12, Appendix Table 12).

In subdistrict 2 of the Kuskokwim River the coho season opened for 12 hours on August 18 and 12 hours on August 22. A total of 2,603 salmon was harvested by 16 fishermen (Table 13).

Subsistence Fishery

Methods: The annual survey of the Kuskokwim River subsistence fishery was initiated in 1960. During the early years, the Department utilized "smokehouse counts" to determine total utilization of subsistence caught fish. In an effort to determine additional timing and magnitude data, the Department began using "subsistence catch calendars" which are distributed to fishermen prior to the fishing season. Subsistence fishermen enter their daily catches of salmon and non-salmon species on the calendar. During July and August a Department crew utilizes a cabin skiff to travel more than 360 river miles (Eek to Swift River) to collect catch data from the individual fishermen in addition to recording certain information from non-fishing families. After the river survey is completed, catch questionnaires are sent to those fishermen not individually contacted.

In the 1969 Annual Report, a review is presented regarding methods used to obtain subsistence harvest and related information. All subsistence information presented in tabular form in this report, except in Appendix Table 17 represents "expanded data". This includes those families known to have fished but for one reason or another were not personally contacted by the survey crew. Catch data for these families are assumed to be the same as the averages for the particular village and are included in most of the tables.

Reported coho salmon catches are very minimal as the coho salmon run occurs after the survey is completed. Most of the coho salmon catch data is obtained from the return of catch calendars. Prior to 1969, little effort was made to determine the coho salmon harvest. The coho salmon estimates are not included in the comparative catch tables.

Catch and Effort: The Kuskokwim River system's harvest included 35,881 king salmon, 118,809 chum salmon, and 12,240 coho salmon utilized by 698 fishing families during 1978 (Table 15).

The king salmon catch was the second smallest since 1970 and was 7 percent below the 1960-73 average. The 1978 king salmon catch was also 24 percent below the 1974-77 "roe sale years" average of 46,926 (Appendix Table 13).

The chum salmon harvest was smaller than the 1960-73 average catch (36%) and smaller than the 1974-77 average catch (33%). Appendix Table 14 contains the comparative subsistence chum salmon catch information.

In order to evaluate the effect of snowmachines on the subsistence harvest, all fishing families interviewed since 1967 have been checked for the number of snowmachines they owned. The number of families owning snowmachines has more than doubled since 1969 (Appendix Table 15). Average numbers of snowmachines per fishing family during 1967-1978 are shown in Appendix Table 16.

The public relations aspect of the annual subsistence fishery survey is important to the success of the survey itself and the Department's management program. By any method tested, the results of the voluntary contribution of the people of this program are as accurate as the people are capable of giving. The major problem is that many of the fishermen are illiterate and speak only Eskimo and have to relay much of the catch information through their school age children.

There is still a moderate sale or trading of dried salmon on the Kuskokwim River, but is not documented. People from the coastal delta villages still bring their pokes of seal oil to trade for dried fish. The lower river dried fish are now primarily being used for human consumption.

The use of the fishwheel to capture salmon is slowly disappearing from the Kuskokwim River. Only 5 fishwheels were used along the survey route in 1978, compared to 30 in 1965 and 65 in 1960. The fishwheel is being replaced by the more mobile gill net, which involves a lot less time and effort to operate. The use of gill nets is a relatively new technique for most Kuskokwim River residents. The efficiency of the two types of gear is difficult to evaluate, as large catches are often made with both. Table 15 represents an overview of all the subsistence data conducted in 1978.

Escapement

Kuskokwim River drainage escapement estimates from aerial surveys have proved difficult and costly to obtain. Varying stream and weather conditions, in addition to pilot and observer skills, often make the data difficult to interpret (Appendix Table 18). Although aerial surveys will be continued for some streams, emphasis will be placed on obtaining accurate escapement figures by use of counting towers or weirs on several

"key" spawning tributaries.

All the Kuskokwim River aerial survey results for 1978 are presented in Table 18. Escapements of kings, chums and reds were generally above average as documented by aerial survey. It should be noted that survey efforts were again hampered in 1978 by high and turbid stream conditions. In several instances no surveys were possible for some of the major salmon spawning streams.

A counting tower has been operated yearly on the Kogruklu River (Holitna River system) since 1969 (except 1971). In 1978 the estimated salmon run past the tower was projected at: 7,405 kings, 782 reds, 13 pinks and 17,840 chum salmon. The count was made from June 25 to July 31.

The Holitna River weir enumerated 13,132 kings, 1,656 reds, and 47,099 chums during the period from June 28-July 31, 1978. During the first year of operation in 1976 the weir crew counted 5,507 kings, 2,302 reds, and 8,046 chums during the period from June 29 to July 31, 1976.

QUINHAGAK (SUBDISTRICT 4)

Commercial Fishery

The Quinhagak fishery is one of two located south of the Kuskokwim River mouth (Figure 1). This fishery has traditionally been very sporadic due to unstable processing facilities, however, the commercial fishery has stabilized during the past few seasons.

Fishing regulations for this subdistrict are very similar to those found on the Kuskokwim River, except that there are no distinct fishing seasons. Beginning with the 1971 season, the basic fishing period was reduced from two 24-hour periods to two 12-hour periods per week. Commercial fishing is allowed only in Kuskokwim Bay waters. This is necessary to ensure escapement of adequate numbers of salmon up the narrow Kanektok River. The vast majority of gear operated consists of drift gill nets that are fished at low tide in "gutters" located two to three miles offshore and next to shore at high tide. Most of the fishing takes place near the mouth of the Kanektok River.

The Kanektok River king salmon run is later than that of the Kuskokwim River and for this reason the Quinhagak fishery opening is delayed until mid-June. The delayed opening prevents possible interception of Kuskokwim River fish and aids in preventing overharvest of the king salmon run.

Fishermen were required to use small mesh gear (6-inch stretched mesh or smaller) during the entire commercial fishing season. This was necessary primarily to prevent selective harvesting of the larger, more productive king salmon by the large mesh nets. However, the mesh limitation was also designed to increase harvests of the more abundant "other salmon" species (i.e. red, pink, chum, and coho).

The commercial salmon season was opened on June 12 with two 12-hour fishing periods a week continuing until July 3 when an additional 12-hour period was added to the schedule. The additional period is normally implemented in July in order to harvest the more numerous chum and red salmon (Table 16). A total of 12,335 kings, 7,589 reds, 20,114 cohos, 47,033 pinks and 24,798 chums totaling 111,869 fish was taken. All

catches were above the recent 5 year averages with the exception of the chum and red salmon catches (Appendix Table 3). Fishermen were placed on limit for much of the season by one of the major buyers. Commercial fishing effort totaled 200 fishermen, a 22 percent decrease from the record 1977 levels, but still above average.

Subsistence Fishery

Accurate comparable subsistence data has been lacking for the Quinhagak subsistence fishery during recent years. However, observation by the staff indicates that dependence on subsistence fishing has not been high. Apparently the greatest amount of fishing effort occurs in the Kanektok River after the commercial fishing season when mostly coho salmon are taken.

Methods used to tabulate catches made by Quinhagak fishermen were similar to those used for the Kuskokwim River survey. A total of 60 Quinhagak fishing families returning catch calendars reported catching 2,328 kings and 6,440 "other salmon".

Appendix Table 17 shows comparative catch data for 1967-78.

Escapement

Escapement counts made during various aerial surveys of the Kanektok River system are shown in Table 18. Poor weather conditions frequently hampered aerial surveys in the Quinhagak subdistrict. The king, chum and pink salmon escapements appeared to be above average in magnitude. Based on comparative catch data, escapement of all other species was probably average.

GOODNEWS BAY (SUBDISTRICT 5)

Commercial Fishery

Traditionally, the male residents from the villages of Goodnews Bay and Platinum have gone to Bristol Bay each summer to fish or work in the canneries, leaving the women and children home to fish for subsistence purposes. Prior to 1968, there are no records indicating that commercial salmon harvests were ever made in Goodnews Bay. The Department held public meetings in the area during the early 1960's regarding the possibility of initiation of a commercial fishery, but the negative response from village residents plus the absence of salmon buyers precluded this development.

In late August of 1968, the commercial salmon fishing was opened by emergency order in Goodnews Bay. This commercial fishery was created as a result of a request from area residents and Department surveys, which indicated that a small harvestable supply of salmon was available. The fishery has been sporadic in nature due to inconsistent processing capabilities and inclement weather.

The commercial salmon season was opened June 12. The harvest was composed of 3,672 kings, 5,412 reds, 13,764 cohos, 9,103 pinks and 8,590 chums, totaling 42,087 fish. The king salmon catch was second largest and 36 percent above the recent five-year average. Numbers of reds were below the 1974 record level and were also 11% below the recent average.

The coho salmon harvest was 36% below 1974 record but above the five-year average, while the chum salmon harvest was 56% below the 1973 record but above the recent average. Commercial fishing terminated on September 8 (Table 18).

A total of 35 fishermen made commercial landings in 1978, an increase of 1 fisherman below 1977 levels.

Subsistence Fishery:

Goodnews Bay village did not wish to participate in the subsistence survey this season.

Escapement:

Based on comparative catch information escapements of all species in the Goodnews River appeared good.

OUTLOOK FOR 1979

KING SALMON

The majority of returning king salmon in 1979 will be five and six years of age. The Kogrukluk tower count in 1974 was the third largest on record. However, a majority of the kings passing the tower (61%) were identified as three and four year old males. The 1973 tower count was the lowest on record. Aerial surveys conducted during 1973 and 1974 indicated below average escapements in spawning streams surveyed. Commercial and subsistence catch records indicate below average runs occurred in 1973 and 1974.

Although brood years escapements (1972-1973) were below average, chum and coho salmon returns from those years (1973-1974) have proven to be very good. This possibly indicates that freshwater and/or marine survival may have been good for king salmon which should return in 1979.

Therefore, the anticipated run in 1979 is projected to be about average.

CHUM SALMON

Chum salmon will return as three, four and five year old fish from the 1976, 1975 and 1974 brood years. The majority of the run will be composed of four year olds which are the progeny of 1975 spawners. Little comparative escapement information is available, but the Kogrukluk tower count of chum salmon during 1975 was average. However, the 1974 chum count of chum salmon at this site was 40% below average. Commercial catch per unit effort was slightly below average in 1974, but was the largest on record in 1975.

The projected chum salmon run in 1979 is expected to be average in magnitude.

COHO SALMON:

There is little information available to assess coho salmon abundance

in 1979. The majority of cohos mature at four years of age with a few maturing at five years. Due to a lack of funding, very few coho salmon escapement surveys can be made. Commercial catches made during the 1973 and 1975 brood years were above average and average, respectively, and catch per unit effort data were average for both years.

PINK SALMON:

Pink salmon returns during odd-years (1975, 1977, 1979, etc.) are normally poor.

ERING SEA

Kuskokwim
Area
335

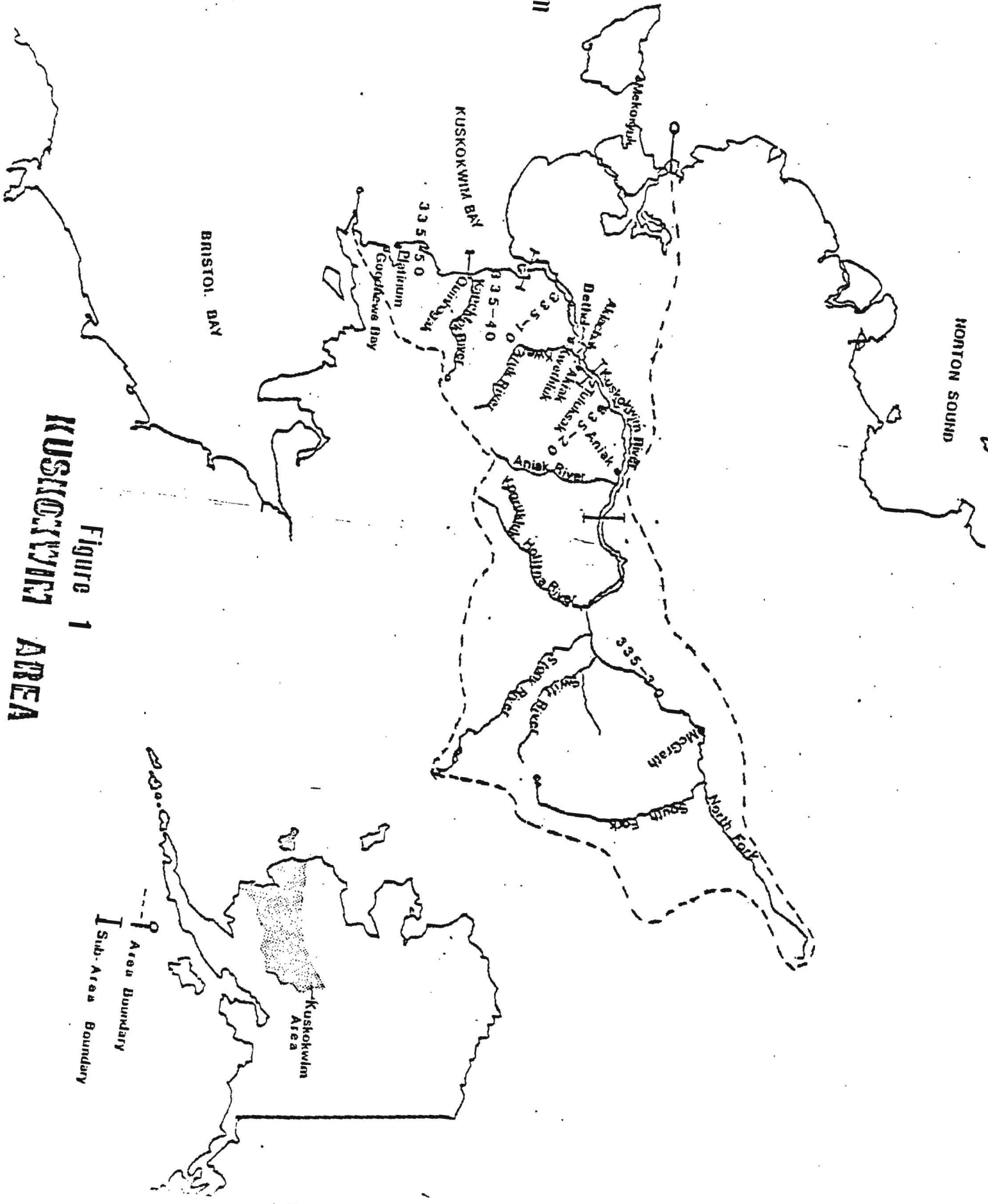
MORTON SOUND

BRISTOL BAY

Figure 1
KUSKOKWIM AREA

--- Area Boundary
| Sub-Area Boundary

Kuskokwim
Area



Location	Mileages from		
	Mouth	Kwegooyuk <u>1/</u>	Bethel
<u>Kuskokwim River</u>			
Mouth	0	-30	-86
Eek Island 60°10' N. 1at.	23	- 7	-63
Kwegooyuk <u>1/</u>	30	0	-56
Tuntutuliak Village	43	13	-43
Kialik River Mouth	42	12	-44
Kialik Forks	58	28	-60
Fowler Island	55	25	-31
Johnson River	66	36	-20
Nunapitchuk	98	68	-52
Kasigluk	99	69	-53
Napakiak	72	42	-14
Oscarville	79	49	- 7
Napaskiak	79	49	- 7
Bethel	86	56	0
Kuskokwak River	102	72	16
Kwethluk	104	74	18
Akiachuk	112	82	26
Akiak	126	96	40
Mishevik Slough	131	101	45
Tuluksak	143	113	57
Lower Kalskag	189	159	103
Kalskag	192	162	106
Aniak	225	195	139
Chuathbaluk (Russian Mission)	236	206	150
Kolmakof River	249	219	163
Napaimiut	258	228	172
Oskawalik River	292	262	206
Crooked Creek	295	265	209
Georgetown	313	283	227
Red Devil	332	302	246
Sleetmute	339	309	253
Holitna River	341	311	255
Kasheglok	465	435	379
Kogrukluik River	467	437	381
Stony River Village	369	339	283
Stony River			
Lime Village			
Swift River	386	356	300
Devil's Elbow	407	377	321
Candle	491	461	405
McGrath	511	481	425
Big River	558	528	472
Medfra	582	552	496
Nicolai			
Telida			
<u>Kuskokwim Bay</u>			
Quinhagak	-19	-49	-105
Kagati Lake			
Goodnews Bay	-54	-84	-140
Platinum	-57	-87	-143
Goodnews Bay Village	-66	-96	-152
Chagvan Bay	-73	-103	-159

1/ Kwegooyuk is the location of Department's test fishing site.

Species code	Genre species	Common name
161	<i>Cottus aleuticus</i>	Coastrange Sculpin
162	<i>Cottus cognatus</i>	Slimy Sculpin
410	<i>Oncorhynchus tshawytscha</i>	King Salmon
420	<i>Oncorhynchus nerka</i>	Red Salmon
430	<i>Oncorhynchus kisutch</i>	Coho Salmon
440	<i>Oncorhynchus gorbuscha</i>	Pink Salmon
450	<i>Oncorhynchus keta</i>	Chum Salmon
500	<i>Esox lucius</i>	Pike
513	<i>Osmerus eperlanus</i>	Boreal Smelt
514	<i>Hypomesus olidus</i>	Pond Smelt
520	<i>Salvelinus alpinus</i>	Arctic Char
530	<i>Salvelinus malma</i>	Dolly Varden
541	<i>Salmo gairdneri</i>	Rainbow Trout
550	<i>Salvelinus namaycush</i>	Lake Trout
570	<i>Stenodus leucichthys</i>	Shee
581	<i>Coregonus nasus</i>	Broad Whitefish
582	<i>Coregonus pidschian</i>	Humpback Whitefish
583	<i>Coregonus sardinella</i>	Least Cisco
584	<i>Coregonus autumnalis</i>	Arctic Cisco
585	<i>Prosopium cylindraceum</i>	Round Whitefish
590	<i>Lota lota</i>	Burbot, Lush
601	<i>Lampetra japonica</i>	Arctic lamprey
610	<i>Thymallus arcticus</i>	Arctic Grayling
630	<i>Dallia pectoralis</i>	Blackfish
640	<i>Catostomus catostomus</i>	Longnose Sucker
650	<i>Hybopsis plumbea</i>	Lake Chub
660	<i>Gasterosteus aculeatus</i>	3-spine Stickleback
661	<i>Pungitius pungitius</i>	9-spine Stickleback
670	<i>Percopsis omiscomaycus</i>	Trout-perch

ESTUARINE

113	<i>Eleginus gracilis</i>	Safron Cod
121	<i>Pleuronectes stellatus</i>	Starry Flounder
122	<i>Liopsetta glacialis</i>	Arctic Flounder
166	<i>Oligocottus maculosus</i>	Sculpin
200	<i>Hippoglossus stenolepis</i>	Pacific Halibut
230	<i>Clupea pallasii</i>	Pacific Herring
516	<i>Mallotus villosus</i>	Caplin

<u>E.O.No.</u>	<u>Date</u>	<u>Action Taken</u>	<u>Justification</u>
1	29 May	Opens Goodnews Bay to commercial herring fishing beginning at 12 midnight May 29, 1978.	Aerial surveys made in this district indicate that good numbers of herring are present.
2	31 May	Closes Security Cove district to commercial herring fishing beginning at 12 midnight, May 31, 1978.	The 350 metric ton harvest level set by the Board of Fisheries, has as of May 30, been surpassed.
3	8 June	Opens the commercial fishing season in subdistrict 1 and establishes the first commercial fishing period which will begin 6 p.m., June 9, and will end at 12 midnight the same date.	Kings present in sufficient numbers.
4	11 June	Opens Quinhagak and Goodnews subdistricts to commercial fishing from 6 P.M. Mondays to 6 A.M. Tuesdays and from 6 P.M. Thursdays to 6 A.M. Fridays of each week effective Sunday June 11, 1978.	Kings present in sufficient numbers.
5	13 June	Opens commercial fishing in Subdistrict 1 and establishes the second fishing period which will begin at 6 P.M. June 14, and end at 12 midnight the same date.	Kings present in sufficient numbers.
6	14 June	Opens commercial fishing in Subdistrict 2 and establishes the first period beginning 6 P.M. June 14, and will end at 12 midnight the same date.	Kings present in sufficient numbers.

<u>E.O.No.</u>	<u>Date</u>	<u>Action Taken</u>	<u>Justification</u>
7	15 June	Opens commercial fishing in Subdistrict 1 and establishes the third such period which will begin at 6 P.M. June 16, and will end 12 midnight the same date.	Kings present in sufficient numbers.
8	16 June	Opens commercial fishing in Subdistrict 2 and establishes the second such period which will begin at 6 P.M. June 16, and will end 12 midnight the same date.	Kings present in sufficient numbers.
9	22 June	Opens commercial fishing in Subdistrict 2 and establishes the third such period. This one, will begin at 6 P.M. June 22, and end 10:00 P.M. the same date.	Kings present in sufficient numbers.
10	21 June	Opens commercial fishing in Subdistrict 1 and establishes the forth such period which will begin 6 P.M. June 22, and end 10:00 P.M. the same date.	Kings present in sufficient numbers.
11	23 June	Opens coincidental commercial fishing periods in Subdistrict 1 and 2 from 6 P.M. until 10 P.M. Friday, June 23, 1978. Additionally this order cancels the 24 hour subsistence salmon fishing closure that was in effect from 6 P.M. Thursday June 22, 1978, until 6 P.M. Friday, June 23, 1978.	Kings present in sufficient numbers.
12	29 June	Increases commercial fishing time in Subdistricts 4 and 5 from two 12-hour periods to three 12-hour periods a week. These periods will be 6 P.M. Monday until 6 A.M. Tuesday, and 6 P.M. Wednesday until 6 A.M. Thursday, and 6 P.M. Friday until 6 A.M. Saturday.	King salmon catches are significantly lower, to date, than in previous years.

<u>E.O.No.</u>	<u>Date</u>	<u>Action Taken</u>	<u>Justification</u>
13	5 July	Changes the fishing time on Thursday July 6, 1978 in Subdistrict 1 from a 6 hour fishing period (6 pm - mid-night), to a 12 hour fishing period (12 noon - 12 midnight)	In order to harvest those chum salmon surplus to escapement and subsistence requirements, increased fishing time is warranted.
14	5 July	Changes the fishing time on Monday July 10, 1978 in sub-district 1 from a 6 hour period (6 pm - 12 midnight) to a 12 hour fishing period (12 noon - 12 midnight).	In order to harvest those chum salmon surplus to escapement and subsistence requirements, increased fishing time is warranted.
15	16 July	Closes Subdistrict 1 to commercial salmon fishing effective Monday, July 17, 1978.	Chum salmon harvest goal attained.
16	30 July	Reopens Subdistrict 1 to commercial fishing on August 1, 1978. Allows for two 12 hour fishing periods a week scheduled for 6 AM to 6PM on Tuesdays and on Fridays	Cohos present in sufficient numbers.
17	30 July	Closes Subdistrict 1 to subsistence fishing from 6 AM Monday July 31, 1978 to 12:00 midnight the same date.	To provide for complete closure in the upper portion of lower Kuskokwim district.
18	6 Aug.	Changes the present weekly fishing periods in Sub-district 4 from 6 PM Monday until 6 AM Tuesday and from 6 PM Wednesday until 6 AM Thursday and from 6 PM Friday until 6 AM Saturday to a new schedule from 6 AM until 6 PM on Mondays, Wednesdays, and Fridays.	Allows a maximum of daylight fishing hours to facilitate fishermen safety during August
19	17 Aug.	Changes the present weekly fishing periods in Subdistrict 5 from 6 PM Monday until 6 AM Tuesday and	This change facilitates enforcement of the closed fishing waters and enhances fishermen safety during fishing

<u>E.O.No.</u>	<u>Date</u>	<u>Action Taken</u>	<u>Justification</u>
		and from 6 PM Wednesday until 6 AM Thursday and from 6 PM Friday until 6 AM Saturday to a new schedule from 6 AM until 6 PM on Mondays, Wednesdays and Fridays.	periods
20	15 Aug.	Opens Subdistrict 2 to commercial salmon fishing from 6 AM Friday, August 18, 1978 until 6 PM Friday August 18, 1978.	Cohos present in sufficient numbers.
21	21 Aug.	Opens coho salmon fishing for the second time in Subdistrict 2 from 6 AM Tuesday, August 22, 1978, until 6 PM the same date.	Cohos present in sufficient numbers. Quota not filled yet.
22	1 Sept.	Extend fishing season 7 days in the Quinhagak and Goodnews subdistricts. This will add three additional fishing periods for these subdistricts.	Coho present in sufficient numbers.

Table 4. Kuskokwim districts regulatory changes adopted by the Board of Fisheries, December 1978 and March 1979.

1. In subdistricts 4 (Quinhagak area) and 5 (Goodnews Bay area) the date for closing these fisheries was changed from Sept 1 to Sept 8.
2. The upstream boundary for chum salmon season (June 26 to Aug 1) in subdistrict 1 (lower Kuskokwim River) was moved from the village of Napakiak to near the village of Bethel. This increases the area open to chum fishing by about 14 miles.
3. The downstream boundary of subdistrict 2 (middle Kuskokwim River) was moved upriver from Mishevik Slough to near the mouth of the Yukon-Kuskokwim Portage. This decreases the area open to commercial salmon fishing by about 55 miles in this subdistrict.
4. In subdistrict 1 (lower Kuskokwim River) the area known as Kuskokuak Slough was closed to commercial salmon fishing. This closure affects 26 miles of river.
5. Subsistence closure of 24 hours before and six hours after commercial fishing periods was extended to Bethel area during chum salmon season in subdistrict 1.
6. Kuskokuak Slough subsistence closure of 24 hours before and six hours after commercial fishing periods was changed to 24 hours before and during commercial fishing periods.
7. In subdistrict 4 (Quinhagak area), the Arolik River was closed to subsistence fishing during commercial fishing periods.

1. Kuskokwim River Test Fishing.

- a. Location: Kwegooyuk on the east bank of the mouth of the Kuskokwim River located 56 river miles downstream from Bethel.
- b. Objectives: Determine run timing and relative abundance of kings, red and chum salmon.
- c. Results: The 1978 project captured 1,445 kings, 2,153 chums & 346 sockeye, totaling 3,944 salmon between May 23 and July 15. The king & chum catches were of the largest ever and accurately reflected good salmon runs in the Kuskokwim River.

2. Kogrukluk River Counting Tower.

- a. Location: About three miles on the Kogrukluk River, tributary to the Holitna River.
- b. Objectives: Determine daily and seasonal timing and magnitude of all species of salmon entering this stream. Conduct visual size of relative age of the king salmon escapement.
- c. Results: The estimated expanded count of salmon escapement from June 25 to July 31 was 7,405 kings, 782 reds, 13 pinks, and 17,840 chums. The escapement was the greatest for king and chum salmon and below average for red salmon since the counts started in 1969. Inclement weather and generator problems caused a 13% loss of counting time.

3. Ignatti Weir.

- a. Location: Upper Holitna River, about 1.5 miles below the Kogrukluk River.
- b. Objectives: Develop a portable weir and trap to enumerate salmon escapement by species and sex and to obtain salmon for sampling without causing harm to the fish.
- c. Results: The Holitna River weir enumerated 13,132 kings, 1,656 reds, 2 pinks, 47,099 chums during the period from June 28-July 31. The king and chum salmon counts were the greatest since the weir has been in operation, and probably were the greatest since the 1920's. The sex ratios, male:female, were average for king salmon, 54:46 and were well above past counts for both red salmon, 43:57 and chum salmon 55:45.

4. Kwethluk Sonar

- a. Location: 69 kilometers up the Kwethluk River at the base of Three Step Mountain.
- b. Objectives 1) Determine feasibility of using the side scan sonar as an in-season salmon management tool on the lower Kuskokwim River, 2) determine salmon run timing and population characteristics, and 3) evaluate the use of the fishwheel and various gillnet techniques on small, fast-water rivers like the Kwethluk.
- c. Results: 1) the side scan sonar is incompatible with the Kwethluk River and evidence was obtained which indicates that salmon run timing is about the same in the lower Kuskokwim tributaries as in the upper, thus ruling out the possibility of those streams contributing to in-season management of the Commercial fishery.

2) Salmon run timing and composition were determined through gillnet, fishwheel and carcass sampling methods. 3) the usefulness of the fishwheel and two gillnetting techniques was evaluated for the Kwethluk River.

5. Commercial Salmon Catch Sampling

- a. Location: Bethel, Quinhagak and Goodnews Bay.
- b. Objectives: Obtain age, sex and size information for commercial caught fish.
- c. Results: Samples of all species were sampled, analyzed and presented in separate reports.

Table 6. Kuskokwim District Processors and Associated Data, 1978

Commercial Operator	Product	Subdistrict
Ball Bros. Inc. General Delivery Dillingham, Alaska 99576	Fresh Salmon King Red Chum Coho Pink	5
James A. Charles Tuntutuliak, Alaska 99680	Fresh Salmon Coho	1
Clark Fishing Enterprises Box 19 Aniak, Alaska 99557	Fresh Salmon King Chum Coho	2
J. B. Crow and Sons, Inc. Box 576 Bethel, Alaska 99559	Fresh Salmon King Red Chum Coho Pink	1, 4
Elm Corporation d/b/a Elm Fisheries P. O. Box 888 Bethel, Alaska 99559	Fresh Salmon King Chum Coho Red Pink	1
John L. Gibson P. O. Box Bethel, Alaska 99559	Frozen Salmon King Chum	1
Kachemak Seafoods Inc. Robert E. Needham Box 129 Togiak, Alaska 99678	Fresh Salmon King	5
Kemp-Palucci Seafoods, Inc. Box 252 Bethel, Alaska 99559	Frozen Salmon King Chum Coho Pink Red	1,4
K & A Fisheries c/o Larry Peterson Aniak, Alaska 99557	Fresh Salmon King Chum Coho	1,2

Table 6. Kuskokwim District Processors and Associated Data, 1978 (Continued)

Commercial Operator	Product	Subdistrict
Kuskokwim Fish Co. P. O. Box 727 Bethel, Alaska 99559	Fresh Salmon Cured Salmon King (smoked/fresh) Chum (smoked/fresh) Coho (smoked/fresh) Pink (fresh) Red (fresh)	1,4
Patson Enterprises Box 445 Bethel, Alaska 99559	Fresh Salmon King Chum Coho Pink Red	4
Yugtak Fish Company Box 668 Bethel, Alaska 99559	Cured Salmon King (mild cure) Chum (mild cure) Coho (mild cure) Pink (mild cure) Red (mild cure)	1,4,5

Table 7. Kuskokwim district entry permits issued by village, 1978. 1/

Village	Number of Entry Permits
Akiachak	50
Akiak	25
Aniak	7 -
Atmauthluak	27
Bethel	182
Chauthbaluk	1 -
Chefornak	3
Eek	42
Goodnews Bay	35
Kalskag	6 -
Kasigluk	42
Kipnuk	12
Kongiganak	28
Kwethluk	79
Kwigillingok	17
Lower Kalskag	3 -
McGrath	1
Napakiak	58
Napaskiak	26
Nunapitchuk	43
Oscarville	7
Platinum	6
Quinhagak	87
Tuluksak	23
Tuntutuliak	57
Anchorage	2
Mt. Village	1
Pilot Station	1
<u>Trapper Creek</u>	<u>1</u>
Total	872

1/ Permits issued by June 16, 1978.

Table 8. Commercial and subsistence salmon catches by species and statistical area, Kuskokwim district, 1978.

<u>Subdistrict</u>	<u>King</u>	<u>Red</u>	<u>Coho</u>	<u>Pink</u>	<u>Chum</u> ^{1/}	<u>Total</u>
<u>335-10 Lower Kuskokwim</u>						
Commercial	43,553	733	210,790	5,829	247,219	508,124
Subsistence ^{2/}	26,779	-	8,672 ^{3/}	-	72,010	107,461
Total	70,332	733	219,462	5,829	319,229	615,585
<u>335-20 Middle Kuskokwim</u>						
Commercial	2,088	0	2,603	3	1,437	6,131
Subsistence ^{2/}	7,679	-	2,069 ^{3/}	-	26,319	36,067
Total	9,767	0	4,672	3	27,756	42,198
<u>335-30 Upper Kuskokwim</u>						
Commercial	0	-	0	-	0	0
Subsistence ^{2/}	1,423	-	1,499 ^{3/}	-	20,480	23,402
Total	1,423	-	1,499	-	20,480	23,402
<u>Subtotal Kuskokwim River</u>						
Commercial	45,641	733	213,393	5,832	248,656	514,255
Subsistence ^{2/}	35,881	-	12,240 ^{3/}	-	118,809	166,930
Total	81,522	733	225,633	5,832	367,465	681,185
<u>335-40 Quinhagak</u>						
Commercial	12,335	7,589	20,114	47,033	24,798	111,869
Subsistence ^{2/}	2,328	-	197	-	6,243	8,768
Total	14,663	7,589	20,311	47,033	31,041	120,637
<u>335-50 Goodnews Bay</u>						
Commercial	5,218	5,412	13,764	9,103	8,590	42,087
Subsistence	41	41	41	41	41	41
Total	5,218	5,412	13,764	9,103	8,590	42,087
<u>Total Kuskokwim District</u>						
Commercial	63,194	13,734	247,271	61,968	282,044	668,211
Subsistence ^{2/}	38,209	-	12,437	-	125,052	175,698
Total	101,403	13,734	259,708	61,968	407,096	843,909

^{1/} Subsistence catches contain small numbers of red and pink salmon.

^{2/} Expanded data.

^{3/} Minimal catches.

^{4/} Unable to survey.

Table 9. Average weight of salmon taken in the Kuskokwim district commercial fishery, 1978 ^{1/}

<u>Subdistrict</u>	<u>Statistical Area</u>	<u>King</u>	<u>Average Weights by Species</u> ^{2/}			<u>Chum</u>
			<u>Red</u>	<u>Coho</u>	<u>Pink</u>	
Kuskokwim River:	335-10					
	335-20	24.4 (11.1)	10.2 (4.6)	7.0 (3.2)	3.9 (1.8)	9.1 (4.1)
Quinhagak:	335-40	24.0 (11.0)	5.1 (2.8)	7.4 (3.4)	3.8 (1.7)	7.4 (3.4)
Goodnews Bay:	335-50	25.7 (11.7)	6.6 (3.0)	8.4 (3.8)	4.4 (2.0)	7.2 (3.3)

^{1/} Data obtained from processor weights, randomly sampled.

^{2/} Pounds (kilograms).

Table 10. Commercial salmon catch data, lower Kuskokwim River ^{District} (Subdistrict 1, Stat. Area 335-10), all gear combined, 1978.

Period Code	Date of Landing	Hours Open to Fishing	Fishermen	Fishermen Hours	Catch					Catch/Fisherman Hour		
					King	Red	Coho	Pink	Chum	King	Coho	Chum
1	6/9 Period	6	509	3,054	7,590	10			734	2.5		0.2
2	6/14 Period	6	266	1,596	6,142				1,291	3.9		0.8
3	6/16 Period	6	396	2,376	12,341	22			5,950	5.2		2.5
4	6/22 Period	4	72	288	1,724				1,629	6.0		5.7
5	6/23 Period	4	429	1,716	8,342				12,587	4.9		7.3
	Subtotal 1/	26	615	9,030	36,139	32			22,191	4.0		2.5
6	6/26 Period	6	449	2,694	1,964	1		10	44,296	0.7		16.4
7	6/29 Period	6	442	2,652	1,759	52		5	36,793	0.7		13.9
8	7/3 Period	6	476	2,856	894	93		8	26,629	0.3		9.3
9	7/6 Period	12	485	5,820	1,460	302		307	48,031	0.3		8.3
10	7/10 Period	12	428	5,136	694	216		394	48,931	0.1		9.5
11	7/13 Period	6	422	2,532	293			183	14,935	0.1		5.9
	Subtotal 2/	48	617	21,690	7,064	664		907	219,615	0.3		10.1
12	8/1 Period	12	297	3,564	97	23	6,311	953	3,290	+	1.7	0.9
13	8/4 Period	12	364	4,368	79	6	9,445	1,334	906	+	2.2	0.2
14	8/8 Period	12	433	5,196	65	4	28,501	1,015	629	+	5.5	0.1
15	8/11 Period	12	485	5,820	39	2	42,428	614	280	+	7.3	+
16	8/15 Period	12	476	5,712	33		48,950	340	87	+	8.6	+
17	8/18 Period	12	434	5,208	16	2	29,485	378	67	+	5.7	+
18	8/22 Period	12	396	4,752	8		22,287	165	53	+	4.7	+
19	8/25 Period	12	293	3,516	12		11,168	81	13	+	3.2	+
20	8/29 Period	12	250	3,000	1		12,215	42	80	+	4.1	+
	Subtotal 3/	108	597	41,136	350	37	210,790	4,922	5,413	+	5.2	0.1
	Grandtotal	182	723	71,856	43,553	733	210,790	5,829	247,219	0.6	2.9	3.4

1/ King salmon season 6/9-6/23

2/ Chum salmon season 6/26-7/13

Table 11. Commercial salmon catch data, Lower Kuskokwim River downstream of Napakiak (Subdistrict 1, Stat. Area 335-11) all gear combined, 1978.

Period Code	Date of Landing	Hours Open to Fishing	Fishermen	Fishermen Hours	Catch					Catch/Fisherman Hour		
					King	Red	Coho	Pink	Chum	King	Coho	Chum
1	6/9 Period	6	259	1,554	4,129	2			379	2.7		0.2
2	6/14 Period	6	124	744	3,196				499	4.3		0.7
3	6/16 Period	6	268	1,608	3,920				1,083	2.4		0.7
4	6/22 Period	4	0	0	no fishing effort - storm							
5	6/23 Period	4	127	508	996				2,292	2.0		4.5
	Subtotal 1/	26	348	4,414	12,241	2			4,253	2.8		1.0
6	6/26 Period	6	449	2,694	1,964	1		10	44,296	0.7		16.4
7	6/29 Period	6	442	2,652	1,759	52		5	36,793	0.7		13.9
8	7/3 Period	6	476	2,856	894	93		8	26,629	0.3		9.3
9	7/6 Period	12	485	5,820	1,460	302		307	48,031	0.3		8.3
10	7/10 Period	12	428	5,136	694	216		394	48,931	0.1		9.5
11	7/13 Period	6	422	2,532	293			183	14,935	0.1		5.9
	Subtotal 2/	48	617	21,690	7,064	664		907	219,615	0.3		10.1
12	8/4 Period	12	153	1,836	35	1	2,631	437	626	+	1.4	0.3
13	8/8 Period	12	181	2,172	41	2	4,261	701	270	+	2.0	0.1
14	8/11 Period	12	248	2,976	39		19,506	631	224	+	6.6	+
15	8/15 Period	12	280	3,360	23		23,460	361	123	+	7.0	+
16	8/18 Period	12	254	3,048	19		16,693	171	27	+	5.5	+
17	8/22 Period	12	211	2,532	11	2	16,440	222	29	+	6.5	+
18	8/25 Period	12	153	1,836	2		5,668	55	8	+	3.1	+
19	8/29 Period	12	96	1,152	3		3,474	48	5	+	3.0	+
20	Subtotal 3/	108	468	19,836	173	5	94,812	2,642	1,312	+	4.8	+
Grand Total		182	684	50,574	19,478	671	94,812	3,549	225,180	0.4	1.9	4.5

1/ King salmon season 6/9-6/23

2/ Chum salmon season 6/26-7/13

3/ Coho salmon season 8/1-8/29

Table 12. Commercial salmon catches, Lower Kuskokwim River upstream of Napakiak (Subdistrict 1, Stat. Area 335-12), all gear combined, 1978.

Period Code	Date of Landing	Hours Open to Fishing	Fishermen	Fishermen Hours	Catch					Catch/Fisherman Hour		
					King	Red	Coho	Pink	Chum	King	Coho	Chum
1	6/9 Period	6	250	1,500	3,461	8			355	2.3		0.2
2	6/14 Period	6	141	846	2,946				792	3.5		0.9
3	6/16 Period	6	122	732	8,421	22			4,867	11.5		6.6
4	6/22 Period	4	73	292	1,724				1,629	5.9		5.6
5	6/23 Period	4	324	1,296	7,346				10,295	5.7		7.9
	Subtotal 1/	26	412	4,666	23,898	30			17,938	2.2		1.7
12	8/1 Period	12	162	1,944	62	22	3,680	516	2,672	+	1.9	1.4
13	8/4 Period	12	213	2,556	38	4	5,184	633	636	+	2.0	2.6
14	8/8 Period	12	209	2,508	26	4	8,995	384	405	+	3.6	0.2
15	8/11 Period	12	235	2,820	16	2	18,968	253	157	+	6.7	0.1
16	8/1 Period	12	280	3,360	14		32,257	169	60	+	9.6	+
17	8/18 Period	12	253	3,036	5		13,045	156	38	+	4.3	+
18	8/22 Period	12	275	3,300	6		16,619	110	45	+	5.0	+
19	8/25 Period	12	211	2,532	9		7,694	33	8	+	3.0	+
20	8/29 Period	12	177	2,124	1		9,536	26	80	+	4.4	+
	Subtotal	108	468	24,180	177	32	115,978	2,280	4,101	+	4.8	0.2
	Grand Total	134	520	28,846	24,075	62	159,978	2,280	22,039	0.8	4.0	0.8

1/ King salmon season 6/9-6/23

2/ Coho salmon season 8/1-8/29

Table 13. Commercial salmon catches, Lower Kuskokwim River upstream of Napakiak (Subdistrict 1, State Area 335-12), all gear combined, 1978.

Area 335-12

335-20

up River HUKU

Subdistrict 2, 1978

Period Code	Date of Landing	Hours Open to Fishing	Fishermen	Fishermen Hours	Catch					Catch/Fisherman	
					King	Red	Coho	Pink	Chum	King	Coho
1	6/14 Period 1/	6	8	48	359				59	7.4	
2	6/16 Period 1/	6	13	78	424				189	5.4	
3	6/22 Period 1/	4	9	36	411				377	11.4	
4	6/23 Period 1/	4	24	96	893				804	9.3	
1/ King Salmon Season (6/14-6/23)											
		20	28	560	2,087				1,429	3.7	
34. 5	8/18 3/ Period 3/	12	3	36			257				7.1
6	8/22 Period 3/	12	17	204	1		2,346	3	8	+	11.5
3/ Coho Salmon Season *8/18-8/22)											
		24	16	384	1		2,603	3	8	+	6.7
Grand Total		44	43	1,892 492	2,088		2,603	3	1,437	1.1	1.3

* 44 x 43 = 1892
is not the right way
to calculate P.h.

Table 14. Age and sex composition of Kuskokwim District king salmon sampled at various locations, 1978.

Area (gear)	Sex	Combined Age Classes		Age 4 ₂		Age 5 ₂		Age 6 ₂		Age 7 ₂	
		No.	%	No.	%	No.	%	No.	%	No.	%
Kwegooyuk (8-1/2" mesh set gillnet) 2/	Male	206	49.4	6	1.4	44	10.6	145	34.8	11	2.6
	Female	211	50.6	0	0.0	14	3.4	182	43.6	15	3.6
	Total	417	100.0	6	1.4	58	14.0	327	78.4	26	6.2
Kwegooyuk (5-1/2" mesh set gillnet) 2/	Male	61	96.8	23	36.5	26	41.3	11	17.4	1	1.6
	Female	2	3.2	0	0.0	0	0.0	1	1.6	1	1.6
	Total	63	100.0	23	36.5	26	41.3	12	19.0	2	3.2
Bethel (8-1/2" mesh gillnet) 1/	Male	128	44.1	1	0.3	25	8.6	92	31.7	10	3.4
	Female	162	55.9	0	0.0	14	4.9	141	48.6	7	2.4
	Total	290	100.0	1	0.3	39	13.5	233	80.3	17	5.9
Quinhagak (6" mesh gillnet) 1/	Male	100	42.7	0	0.0	11	4.7	85	36.3	4	1.7
	Female	134	57.3	0	0.0	1	0.4	122	52.2	11	4.7
	Total	234	100.0	0	0.0	12	5.1	207	88.5	15	6.4
Holitna Weir 3/	Male	267	52.5	86	16.9	48	9.4	109	21.4	24	4.7
	Female	242	47.5	0	0	4	0.8	180	35.4	58	11.4
	Total	509	100.0	86	16.9	52	10.2	289	56.8	82	16.1

1/ Commercial catch sample

2/ Test fish samples

3/ Weir samples

Estimated Salmon Catch & Fishing Family Data 1/

Village	Families	People	Dogs	Snow Machines	King Salmon	Small <u>1/</u> Salmon	Coho Salmon	8½" Net	5½" Net	Fish- wheel
Igillingok	3	12	3	2	575	60	18	3	3	0
Kongigonak										
Kipnuk										
Eek	29	145	72	58	1,807	1,055	819	29	33	0
Tuntutuliak	32	202	108	45	1,656	5,563	1	38	40	0
Kasigluk	24	163	58	36	608	1,242	0	24	28	0
Nunapitchuk	32	233	139	64	2,178	4,369	608	41	46	0
Atmautluak	28	183	145	37	966	3,720	140	31	32	0
Napakiak	45	251	221	47	2,140	5,163	911	48	47	0
Oscarville	9	50	49	9	349	1,213	63	6	6	0
Napaskiak	35	212	96	45	2,122	8,376	910	28	27	0
Bethel	174	1,035	414	153	6,905	12,394	1,337	148	150	0
Kwethluk	59	336	294	69	3,172	11,311	2,727	57	60	0
Akiachuk	44	300	225	63	2,951	8,824	621	47	51	0
Akiak	25	150	319	26	1,850	8,720	517	30	28	0
Tuluksak	28	198	190	30	1,906	4,386	92	22	28	0
Lower Kalskag	28	168	132	45	1,951	3,508	196	19	30	0
Upper Kalskag	16	109	86	19	1,253	6,100	1,179	10	14	0
Aniak	26	150	130	40	1,331	7,600	442	14	26	0
Chauthbaluk	12	72	40	20	1,238	4,725	160	10	12	0
Napamute	3	8	14	5	144	1,886	1	1	4	1
Georgetown	0									
Crooked Creek	14	76	38	10	488	2,133	336	5	14	0
Red Devil	4	18	29	4	153	5,565	596	1	3	2
Sleetmute	9	49	23	13	300	2,771	20	3	10	1
Sleetmute-Holitna	11	24	38	2	156	4,580	546	11	0	0
Stony River	8	55	58	12	182	3,545	-	0	11	1
Lime Village	-									
TOTALS, Kusko. R 698✓	4,199	2,928	855		35,881	118,809	12,240	626	703	5
Quinhagak	65	366	121	111	2,328	6,243	197	34	56	0

Table 16. Commercial salmon catch data, Quinhagak (Subdistrict 4, Stat. Area 334-40), all gear combined, 1978.

Period Code	Date of Landing	Hours Open to Fishing	Fishermen	Fishermen Hours	Catch				Catch/Fishermen Hour				
					King	Red	Cono	Pink	Chum	King	Red	Cono	Chum
1	6/12 Period	12	5	60	291				39	4.9			0.7
2	6/15 Period	12	21	252	725				265	2.9			1.1
	6/19	6											
	6/20	6											
3	6/22 Period	12	123	1,476	2,081	6		11	937	1.4	+		0.6
	6/23	6											
4	6/25 Period	6				STORM							
	6/27	6											
5	6/29 Period	12	32	384	1,045	472		1,745	2.7	1.2			4.5
	6/30	6											
6	6/30 Period	12				STORM							
	7/1	6											
7	7/3 Period	12	36	432	1,246	439		1,529	2.9	1.0			3.5
	7/4	6											
8	7/5 Period	12	64	768	3,079	1,376		7	3,098	4.0	1.8		4.0
	7/6	6											
9	7/7 Period	12	68	816	1,389	1,582		1,166	3,987	1.7	1.9		4.9
	7/8	6											
10	7/10 Period 1/	12	73	876	654	456		2,886	4,006	1.0	0.5		4.6
	7/11	6											
11	7/12 Period	12	48	576	302	893		424	789	0.5	1.6		1.4
	7/13	6											
12	7/14 Period	12	67	804	271	903		7,266	2,158	0.3	1.1		2.7
	7/15	6											
13	7/17 Period	12	71	852	412	677		4,244	2,858	0.5	0.8		3.4
	7/18	6											
14	7/19 Period	12	72	864	230	91		16,075	1,172	0.3	0.1		1.4
	7/20	6											
15	7/21 Period	12				STORM							
	7/22	6											
16	7/24 Period	12	70	840	246	44	1	11,204	816	0.3	+	+	1.0
	7/25	6											
17	7/27 Period	12	36	432	162	197	9	3,529	936	0.4	0.5	+	2.2
	7/28	6											
18	7/28 Period	12	32	384	67	244	21		192	0.2	0.6	+	0.5
	7/29	6											
19	7/31 Period	12	7	84	21	76	9		31	0.3	0.9	0.1	0.4
	8/1	6											
20	8/2 Period	12				STORM							
	8/3	6											
21	8/4 Period	12	3	36	7	14	44		8	0.2	0.4	1.2	0.2
	8/5	6											
22	8/7 Period	12	13	156	14	60	169		27	+	0.4	1.3	0.2
23	8/9 Period	12	28	336	11	4	761	119	31	+	+	2.3	0.1
	8/9	6											
24	8/11 Period	12	29	348	10	20	326		10	+	0.1	0.9	+
25	8/14 Period	12	29	348	18	25	1,481	29	10	+	0.1	4.3	+
26	8/16 Period	12	44	528		10	3,018	66	15		+	5.7	+
27	8/18 Period	12	2/	2/	10		1,426		19	2/		2/	2/
28	8/21 Period	12	37	444	5		3,243		6	+		7.3	+
29	8/23 Period	12	34	408			1,537		6			3.8	+
30	8/25 Period	12	38	456	4		1,720		2	+		3.8	+
31	8/28 Period	12	36	432	32		1,199		104	.1		2.7	.2
32	8/30 Period	12	28	336	1		2,092		1	+		6.2	+
33	9/1 Period	12	21	252	2		730			+		2.9	
34	9/4 Period	12	21	252			886		1			3.5	+
35	9/6 Period	12	25	300			612	7				2.0	
36	9/8 Period	12	21	252			378					1.5	
37	9/8 Period	12	14	168			452					2.7	
GRAND TOTAL		444	200	14,952	12,335	7,589	20,114	47,033	24,798	.8	.5	1.3	1.7

1/ Some tickets missing. Number of fishermen probably larger than stated. Catches adjusted by estimate of catch.

2/ Information not available.

Table 17. Commercial salmon catch data, Goodnews Bay (Subdistrict 5, Stat. Area 335-50), all gear combined, 1978.

Period Code	Date of Landing	Hours Open to Fishing	Fisherman	Fisherman Hours	King	Red	Catch			Catch/Fisherman Hour				
							Cono	Pink	Chum	King	Red	Cono	Chum	
	6/12	6												
	6/13	6												
1	Period	12					STORM							
	6/15	6												
	6/16	6												
2	Period	12	6	72	337	128			221	4.7	1.8		3.1	
	6/19	6												
	6/20	6												
3	Period	12	6	72	325	135		1	97	4.5	1.9		1.3	
	6/22	6												
	6/23	6												
4	Period	12					STORM							
	6/26	6												
	6/27	6												
5	Period	12	21	252	831	584			1,594	3.3	2.3		6.3	
	6/29	6												
	6/30	6												
6	Period	12	21	252	1,647	970		68	1,781	6.5	3.8		7.1	
	7/3	6												
	7/4	6												
7	Period	12	23	276	408	1,258		295	1,229	1.5	4.6		4.5	
	7/5	6												
	7/6	6												
8	Period	12	23	276	1,197	1,076		547	2,319	4.3	3.9		8.4	
	7/7	6												
	7/8	6												
9	Period	12					NO BUYER							
	7/10	6												
	7/11	6												
10	Period	12					STORM							
	7/12	6												
	7/13	6												
11	Period	12	24	288	311	616		4,376	902	1.0	2.1		3.1	
	7/14	6												
	7/15	6												
12	Period	12	24	288	160	602		3,220	445	.5	2.0		1.5	
	7/17	6												
	7/18	6												
13	Period	12					NO BUYER							
	7/19	6												
	7/20	6												
14	Period	12					NO BUYER							
	7/21	6												
	7/22	6												
15	Period	12					NO BUYER							
	7/24	6												
	7/25	6												
16	Period	12					NO BUYER							
	7/26	6												
	7/27	6												
17	Period	12					NO BUYER							
	7/28	6												
	7/29	6												
18	Period	12					NO BUYER							
	7/31	6												
	8/1	6												
19	Period	12					NO BUYER							
	8/2	6												
	8/3	6												
20	Period	12					NO BUYER							
	8/4	6												
	8/5	6												
21	Period	12					NO BUYER							
	8/7	6												
	8/8	6												
22	Period	12					NO BUYER							
	8/9	6												
	8/10	6												
23	Period	12					NO BUYER							
	8/11	6												
	8/12	6												
24	Period	12	5	60		18	668	164			13	11.1		
	8/14	6												
	8/15	6												
25	Period	12	13	156		18	1,109	208	2		.1	7.1	+	
	8/16	6												
	8/17	6												
26	Period	12					INFORMATION NOT AVAILABLE							
	8/18	6												
27	Period	12	7	84			207					2.4		
	8/21	6												
28	Period	12	13	156			1,129	118				7.2		
	8/23	6												
29	Period	12	15	180		4	1,099	64			.4	6.1		
	8/25	6												
30	Period	12	18	216	1	3	1,741	42		+	.2	8.1		
	8/28	6												
31	Period	12	16	192			1,983					10.3		
	8/30	6												
32	Period	12	14	168			464					2.7		
	9/1	6												
33	Period	12	18	216			1,892					8.8		
	9/4	6												
34	Period	12	15	180	1		1,331			+		7.4		
	9/6	6												
35	Period	12	13	156			844					5.4		
	9/8	6												
36	Period	12	11	132			1,307					9.9		
	9/8	6												
GRANDTOTAL			432	35	3,672	5,218	5,412	13,764	9,103	8,590	1.4	1.5	3.7	2.3

Tabl Aerial Salmon escapement survey in the Kus im district, 1978.

	Survey Conditions	Date	Kings	Reds	Cohos	Pinks	Chums
KUSKOKWIM BAY							
<u>Goodnews River System</u>							
Middle-fork Goodnews Lake Kukaktlim Creek	fair	7-23-78	313				4
<u>Kanekotk River System</u>							
Kanektok mouth to Nukluk Creek	fair	7-28-78	5,869	17,650		513,100	222,650
Nukluk Creek to Kanutik Creek	fair	7-28-78	3,740	1,450		8,500	6,500
Kanuktik Creek to Lake Kagati	fair	7-28-78	390	540		850	140
Lake Kagati	fair	7-28-78		23,250			
Kaeklok red salmon lakes	fair	7-28-78		1,325			
KUSKOKWIM RIVER							
<u>Aniak River System</u>							
Aniak River							
Salmon River to Gemuk Mt.	good	9-19-78				43	
Gemuk Mt. to Aniak Lake	good	9-19-78				97	
Aniak Lake	good	9-19-78					330
<u>Salmon River</u>							
mouth to left fork	fair	7-18-78	119				
left fork	fair	7-18-78	119				
middle fork	fair	7-18-78	51				
right fork	fair	7-18-78	33				
mouth to left fork	good	9-19-78				25	
left fork	good	9-19-78				48	
middle fork	good	9-19-78				60	
right fork	good	9-19-78				18	

Kipchuk River

lower 25 miles	poor	7-18-78	187	
lower 20 miles	good	9-19-78		11

Big River System

186 km to Eek Lake Creek	good	7-28-78	468	80
Eek Lake Creek to Rainy				
Creek airstrip	good	7-28-78	273	84
Middle-fork Eek River	fair	7-28-78	3,000	10,000

Holitna River System

Holitna River mouth to tip of				
Nogamut Mountain	fair	7-30-78	3,048	20,733
Nogamut Mountain to Kiknik Creek	fair	7-30-78	1,286	1,200
Kiknik Creek to Kasheglok	fair	7-30-78	1,480	420
Kasheglok to Weir	fair	7-30-78	104	
Weir to confluence of				
Shotgun & Kogrukluk	fair	7-30-78	1,315	
Chukowan River				
Mouth to first tributary				
on left	good	7-30-78	379	22
Left tributary to Enatalik				
Creek	good	7-30-78	685	150

Holokuk River System

Mouth to Canyon	good	7-30-78		231
Canyon to Chineekluk	good	7-30-78	45	
Kiokluk lake	good	7-30-78		950

Kasigluk River System

Kasigluk River first cutoff to				
second cutoff	fair	7-12-78		2,869
Second cutoff to Little				
Kasigluk River	fair	7-12-78	130	1,228

Kisar River System

Kisaralik airstrip to Goldengate Falls	fair	7-27-78	1,090	20	2,100
Goldengate Falls to Kisaralik Lake	fair	7-27-78	1,327		

Kwethluk River System

Three Step Mountain to Elbow Mountain	fair	7-27-78	510	100	2,200
Elbow Mountain to Canyon Creek	fair	7-27-78	766		950
Canyon Creek to headwaters	fair	7-27-78	253		
Canyon Creek	good	7-27-78	193		70

MIDDLE-FORK KUSKOKWIM RIVER SYSTEMPitka Fork

Bear Creek	fair	7-25-78	227		
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Salmon River

Left fork	good	7-25-78	38		1
Middle fork	good	7-25-78	27		
Right fork	good	7-25-78	1,035		

Stony River

Can River	fair	7-29-78	23		292
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Swift River

Cheeneetnuk River mouth to foothills	fair	7-29-78	180		
Foothills to Shoeleather Creek	fair	7-29-78	93		
Gagaruak River mouth to ridge on left	good	7-29-78	423		20
Ridge to 2,500 foot peak	good	7-29-78	81		8

Tatlawiksuk River

Tatlawiksuk River mouth to foothills	poor	7-29-78	28		
Foothills to 1,467 foot peak	poor	7-29-78	58		22

Tulu . River

1/2 way between Mts. & Kusko.
conflu.
NYAC to last hill

fair
good

7-18-78
9-20-78

403

64

2,007

Appendix Table 1. Kuskokwim district commercial and subsistence salmon catches, 1913-1978.

Year	Commercial Catch						Subsistence Catch ^{1/}		
	King	Red	Coho	Pink	Chum	Total	King	Other Salmon ^{2/}	Total
1913	7,800					7,800			
1914		2,667				2,667			
1915									
1916	949					949			
1917	7,878					7,878			
1918	3,055					3,055			
1919	4,836					4,836			
1920	34,853					34,853			
1921	9,854					9,854			
1922	8,944	6,120				15,064			180,000
1923	7,254					7,254			
1924	19,253	900	7,167		7,167	34,487	14,700	203,148	217,848
1925	1,664	5,800				7,514	10,800	230,850	241,650
1926								738,576	738,576
1927								286,254	286,254
1928								481,090	481,090
1929								560,196	560,196
1930	7,515	2,448				9,963		538,650	538,650
1931	8,541					8,541		389,367	389,367
1932	9,339					9,339		746,415	746,415
1933							6,290	433,998	440,288
1934							20,800	597,132	617,932
1935	6,448		8,296			14,744	22,930	554,040	576,970
1936	624					624	33,500	549,123	582,923
1937	480					480		537,111	537,111
1938	624		828			1,452	10,153	400,242	410,395
1939	134					134	14,000	125,425	139,425
1940	247		500			747	8,000	415,523	423,523
1941	187		674			861	8,000	415,523	423,523
1942							6,400	325,339	331,739
1943							6,400	325,800	332,200

1946	2,288		674			2,962			
1947	5,356					5,356			

1951	4,210					4,210			
1954	57					57			
1959	3,760					3,760			
1960	5,969	5,649	5,498		3	17,119	20,361	327,297	347,658
1961	23,246	2,308	5,090	91	18,864	49,599	30,910	185,447	216,357
1962	20,867	10,313	12,598	4,340	45,707	93,831	14,642	165,626	180,268
1963	18,571		15,660			34,231	37,246	141,550	178,796
1964	21,230	13,422	28,992	939	707	65,290	30,853	214,942	245,795
1965	24,965	1,886	12,191		4,242	43,284	31,143	323,002	354,145
1966	25,823	1,030	22,985	268	2,610	52,716	53,606	201,002	254,608
1967	29,986	652	58,239		8,235	97,112	61,224	252,447	313,671
1968	43,157	5,884	154,302	75,818	19,694	298,845	34,986	301,531	336,517
1969	64,777	10,362	110,473	1,251	50,377	237,240	43,732	245,299	289,031
1970	65,082	12,654	62,245	27,422	60,566	227,979	71,376	263,746	335,112
1971	44,936	6,054	10,006	13	99,423	160,432	45,465	130,329	175,794
1972	55,482	4,312	23,880	1,952	97,197	182,823	43,335	131,514	174,849
1973	51,374	5,224	152,408	634	184,207	393,847	41,697	211,468	253,165
1974	30,670	29,003	179,579	60,052	196,127	495,431	29,590	321,358	350,848
1975 ^{3/}	27,799	17,535	109,814	899	223,532	379,579	51,045	180,429	231,474
1976	49,262	14,636	112,130	39,998	231,877	447,903	60,603	239,461	300,064
1977	58,256	18,621	263,728	434	298,959	639,998	58,163	216,824	276,987
1978	63,194	13,734	247,271	61,968	282,044	668,211	38,209 ^{4/}	137,489 ^{4/}	175,698 ^{4/}

Previous 5-yr. ave.	43,472	17,004	163,532	20,403	226,940	471,351	48,220	234,308	282,528

^{1/} Subsistence catches for 1960-1976 have been revised and corrected.^{2/} Primarily chum salmon.^{3/} Final catch data used.^{4/} Goodnews Bay not surveyed.

APPENDIX TABLE 2
KUSKOKWIM DISTRICT, COMMERCIAL EFFORT DATA BY SUBDISTRICT, 1970-1978. 1/

<u>Subdistrict 1</u>				
Year	KING SEASON	CHUM SEASON	COHO SEASON	TOTAL
1970	361	<u>2/</u>	266	387
1971	418	216	83	422
1972	405	176	245	425
1973	456	341	411	530
1974	606	467	516	666
1975	472	540	533	737
1976	561	517	516	674
1977	563	522	572	653
1978	615	617	597	723
Previous 5 year ave.	532	477	510	652

<u>Subdistrict 2</u>				
Year	KING SEASON	CHUM SEASON	COHO SEASON	TOTAL
1970	10	<u>2/</u>	11	18
1971	22	<u>2/</u>	<u>2/</u>	22
1972	12	<u>2/</u>	<u>2/</u>	12
1973	28	<u>2/</u>	<u>2/</u>	28
1974	36	<u>2/</u>	16	37
1975	38	<u>2/</u>	<u>2/</u>	38
1976	55	<u>2/</u>	11	57
1977	83	54	24	105
1978	28	<u>2/</u>	16	43
Previous 5 year ave.	48	11	10	53

<u>Subdistrict 4</u>		<u>Subdistrict 5</u>	
Year	TOTAL	Year	TOTAL
1970	88	1970	35
1971	61	1971	16
1972	107	1972	14
1973	109	1973	21
1974	196	1974	49
1975	127	1975	50
1976	181	1976	40
1977	258	1977	34
1978	200	1978	35
Previous 5 year ave.	174	Previous 5 year ave.	39

1/ Number of actual fishing vessels.

2/ No commercial fishing allowed.

Appendix Table 3. Kuskokwim district commercial catches by drainage, 1960-1978

Kuskokwim River 1/	King	Red	Coho	Pink	Chum	Total
1960	5,969	0	2,498	0		8,467
1961	18,918	0	5,044	0		23,962
1962	15,341	0	12,432	0		27,773
1963	12,016	0	15,660	0		27,676
1964	17,149	0	28,613	0		45,762
1965	21,989	0	12,191	0		34,180
1966	25,545	0	22,985	0		48,530
1967	29,986	0	56,313	0	148	86,447
1968	34,278	0	127,306	0	187	161,771
1969	43,997	322	83,765	0	7,165	135,249
1970	39,290	117	38,601	44	1,664	79,716
1971	40,274	2,606	5,253	0	68,914	117,047
1972	39,454	102	22,579	8	78,619	140,762
1973	32,838	369	130,876	33	148,746	312,862
1974	18,664	136	147,269	37	171,887	337,984
1975 4/	21,720	23	81,945	10	181,840	285,538
1976	30,735	2,971	88,501	133	177,864	300,204
1977	35,830	9,379	241,364	203	248,721	535,451
1978	45,641	733	213,393	5,832	248,656	514,255
5 yr Average	27,867	2,576	137,985	83	785,812	354,327

Quinhagak (Kanektok River) 2/	King	Red	Coho	Pink	Chum	Total
1960	0	5,649	3,000	0	0	8,649
1961	4,328	2,308	46	90	18,864	25,636
1962	5,526	10,313	0	4,340	45,707	65,886
1963	6,555	0	0	0	0	6,555
1964	4,081	13,422	379	939	707	19,528
1965	2,976	1,886	0	0	4,242	9,104
1966	278	1,030	0	268	2,610	4,186
1967	0	652	1,926	0	8,087	10,665
1968	8,879	5,884	21,511	75,818	19,497	131,589
1969	16,802	3,784	15,077	953	38,206	74,822
1970	18,629	5,393	16,850	15,195	46,556	102,623
1971	4,185	3,118	2,982	13	30,208	40,506
1972	15,880	3,286	376	1,878	17,247	38,667
1973	14,993	2,783	16,515	277	19,680	54,248
1974	8,704	19,510	10,979	43,642	15,298	98,133
1975 4/	3,928	8,584	10,742	486	35,233	58,973
1976	14,110	6,090	13,777	31,412	43,659	109,048
1977	19,090	5,519	9,028	202	43,707	77,546
1978	12,335	7,589	20,114	47,033	24,798	111,869
5 yr Average	12,165	8,497	12,208	15,204	31,515	79,589
	11,633	9,458	12,928	21,555	32,537	

Goodnews Bay (Goodnews River) 3/	King	Red	Coho	Pink	Chum	Total
1968			5,485			5,485
1969	3,978	6,256	11,631	298	5,006	27,169
1970	7,163	7,144	6,974	12,183	12,346	45,630
1971	477	330	1,771	0	301	2,879
1972	264	924	925	66	1,331	3,510
1973	3,543	2,072	5,017	324	15,781	26,737
1974	3,302	9,357	21,340	16,373	8,942	59,314
1975 4/	2,151	8,928	17,127	403	6,459	35,068
1976	4,417	5,575	9,852	8,453	10,354	38,651
1977	3,336	3,723	13,335	29	6,531	26,954
1978	5,218	5,412	13,764	9,103	8,590	42,087
5 yr Average	3,349	5,931	13,334	5,116	9,613	37,343
	3,685	6,599	15,084	6,872	8,175	

1/ Includes subdistricts 335-10, 335-20 and 335-30. Commercial fishing in 335-30 has been prohibited since 1966.

2/ Subdistrict 335-40.

3/ Subdistrict 335-50 and includes Chagvan Bay.

4/ Final catch data used.

Appendix Table 4. Comparable commercial king salmon catch data, Kuskokwim district, 1960-1978

Total catch							
Year	335-10 ^{1/}	335-20 ^{1/}	335-30	335-40	335-50	335-60	Total
1960	2,927	1,231	1,811	0			5,969
1961	15,820	1,551	1,547	4,328			23,246
1962	13,306	2,035	0	5,526			20,867
1963	9,095	2,921	0	6,555			18,571
1964	15,754	1,395	0	4,081			21,230
1965	21,452	537	0	2,976			24,965
1966	25,212	333	0	278			25,823
1967	29,367	615		0			29,986
1968	33,451	826		8,879	0		43,157
1969	43,141	853		16,802	3,978	7	64,777
1970	37,715	1,463		18,629	7,163		65,082
1971	35,421	2,439		4,185	477		44,936
1972	37,699	1,755		15,880	264		55,482
1973	28,194	2,244		14,993	3,543		51,374
1974	16,031	951		8,704	3,302		30,670
1975	18,235	1,319		3,928	2,149		27,799
1976	20,010	3,316		14,110	4,417		49,262
1977	28,685	3,975		19,090	3,336		55,086
1978	36,139	2,087		12,335	5,218		55,779

1979 24,633

5 year
average ~~28,291~~
23,820 2,361 12,165 3,349

^{1/} King salmon season only.

Appendix table 5. Commercial salmon pack by species in round weight (lbs), Kuskokwim district, 1968 - 1978 ^{1/}

	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977
<u>Fresh or frozen</u>										
king	794,682	1,032,863	1,113,890	801,628	1,400,243	1,371,685	566,941	159,845	935,652	1,326,7
red	36,480	25,351	68,116	30,635	4,319	37,816	179,768	108,216	95,761	154,7
coho	1,090,690	322,254	453,125	64,457	152,832	883,966	1,245,132	670,598	809,916	2,009,1
pink	303,270	3,413	90,703		6,442	2,092	246,134	2,809	133,911	1,6
chum	146,230	249,007	367,715	678,173	631,781	1,252,607	1,220,496	1,350,936	1,609,718	2,185,5

Salmon roe, (lbs.
of finished pro-
duct.)

<u>2/</u>	56,926	42,958	64,136	62,963	165,574	<u>2/</u>	43,113	120,405 ^{3/}	109,1
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Subsistence roe
(lbs. of raw
product).

157,151	167,1
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1978

Fresh or frozen

king	1,530,461
red	89,489
coho	1,758,213
pink	241,523
chum	2,508,123

Salmon roe, (lbs
of finished prod-
uct)

142,496 ^{3/}

^{1/} Pack represents type of processing when fish were shipped out of district.

^{2/} Information not available.

^{3/} Raw product

Appendix Table 6.. Mean salmon weights and prices paid to fishermen,
Kuskokwim district, 1964-1978

Year	King	Mean weights-lbs.(kgs)			
		Coho	Red	Pink	Chum
1964	23.2 (10.5)	6.5 (3.0)	5.8 (2.6)		6.1 (2.8)
1965	21.7 (9.9)	6.5 (3.0)	6.6 (3.0)		
1966	23.2 (10.5)	6.7 (3.0)			
1967	27.8 (12.6)	5.9 (2.7)	7.4 (3.4)		7.0 (3.2)
1968	23.8 (10.8)	7.2 (3.3)	6.2 (2.8)	4.0 (1.8)	7.9 (3.6)
1969	19.6 (8.9)	7.3 (3.3)	6.2 (2.8)	3.6 (1.6)	5.8 (2.6)
1970	18.9 (8.6)	7.3 (3.3)	5.4 (2.5)	3.3 (1.5)	6.1 (2.8)
1971	26.2 (11.9)	6.1 (2.8)	6.91(3.1)	2/	6.4 (2.9)
1972	24.7 (11.2)	6.4 (2.9)	2/	2/	6.5 (3.0)
1973	26.7 (12.1)	5.8 (2.6)	2/	2/	6.8 (3.1)
1974	17.1 (7.7)	7.5 (3.4)	6.3 (2A)	4.1 (1.9)	6.8 (3.1)
1975	14.9 (6.8)	8.2 (3.7)	2/	2/	6.4 (2.9)
1976	17.0 (7.7)	7.8 (3.5)	6.7 (3.0)	3.5 (1.6)	7.0 (3.2)
1977	22.7 (10.3)	7.3 (3.5)	8.3 (3.8)	3.9 (1.8)	7.3 (3.3)
1978	24.2 (11.0)	7.1 (3.2)	6.5 (3.0)	3.9 (1.8)	8.9 (4.0)

Year	King	Mean prices (per fish)			
		Coho	Red	Pink	Chum
1964	\$ 3.25	\$.35	\$.50	\$	\$
1965 ^{1/}					
1966	3.00	.40	.50	.10	.10
1967	3.55	.52	.40		.25
1968	3.74	.67	.60	.20	.35
1969	3.80	.76	.91	.22	.43
1970	3.78	1.03	1.15	.26	.51
1971 ^{3/}	4.53	.82	.71	2/	.50
1972	4.92	1.00	.88	.25	.54
1973	6.83	1.50	2.32	.53	1.28
1974	7.96	2.00	2.15	.93	1.71
1975	8.05	2.54	2/	2/	1.67
1976	10.82	3.12 ^{4/}	2.85	.88	1.89
1977	26.11	5.07	3.74	.98	3.29
1978	12.09	2.85	3.18	.48	2.83

1/ Samples available only for two periods - 7/1-2 - 7/5-6.

2/ Information unavailable

3/ Information not available for 335-50 (Goodnews) only fished one day.

4/ Information not available for 335-40 (quinhagak).

Appendix Table 7. Dollar value estimates of Kuskokwim district commercial fishery, 1964-1978 ^{1/}

Year	Gross Value of catch to fishermen	Wages earned ^{2/}	Total income to district	Wholesale value of pack ^{3/}	Tax reven to stat
1964	\$ 83,030.00	\$	\$	\$ 409,700.00	\$ 6,100.0
1965	90,950.00			370,000.00	8,200.0
1966	87,466.00			406,500.00	8,100.0
1967	138,647.00	20,000.00	158,647.00	727,000.00	
1968	290,370.00	40,000.00+	330,370.00+	1,135,000.00	17,000.0
1969	297,233.00	60,435.00+	357,668.00+		
1970	362,470.00	127,327.00	489,797.00	1,300,000.00	20,000.0
1971	371,220.00	80,510.00	451,730.00	672,180.00	16,770.0
1972	360,727.00	86,895.00	447,622.00		
1973	827,735.00	150,000.00+	977,735.00	3,600,000.00	32,000.0
1974	1,056,042.00	150,000.00+	1,206,042.00		
1975	899,178.00	165,000.00+	1,064,178.00	2,000,000.00	25,000.0
1976	1,380,229.00	175,000.00 +	1,555,229.00		
1977	3,891,950.00	200,000.00 +	4,091,950.00		
1978	2,337,470.00	250,000.00*	2,587,470.00		

1/ Information not available for wages earned during 1964-1966.

2/ Includes wages paid to tenderboat operators, processing plant employees in district.

Appendix Table 8 Total utilization of Kuskokwim River king salmon, 1960-1978.

Year	Commercial Catch <u>1/</u>	Subsistence Catch <u>2/</u>	Total Utilization
1960	5,969	20,361	26,330
1961	18,918	30,910	49,828
1962	15,341	14,642	29,983
1963	12,016	37,246	49,262
1964	17,149	29,017	46,166
1965	21,989	27,143	49,132
1966	25,545	49,606	75,151
1967	29,986	57,875	87,861
1968	34,278	30,230	64,508
1969	43,997	40,138	84,135
1970	39,290	69,204	108,494
1971	40,274	42,926	83,200
1972	39,454	40,145	79,599
1973	32,838	38,526	71,365
1974	18,664	26,665	> 45,329
1975	21,720	47,784	> 69,504
1976	30,735	58,185	> 88,920
1977	35,830	55,577	> 91,407
1978	45,641	35,881	> 81,522
Previous 5 yr. average	27,867	45,347	73,214

1/ Subdistricts 335-10, 335-20 and 335-30 to the Swift River.

2/ Catches are expanded and include all villages surveyed each year.
Data includes a few villages not included in comparative catch tables.

Appendix Table 9. Comparative commercial king salmon catch data by fishing period during the king salmon season, Kuskokwim River (subdistrict 1, 335-10), 1974-1978. 1979.

Fishing periods (1974)	1974			1975			1976			1977			1978		
	Catch	Boats	C.F.H.	Catch	Boats	C.F.H.	Catch	Boats	C.F.H.	Catch	Boats	C.F.H.	Catch	Boats	C.F.H.
June															
4-6													7,590	509	2.5
6-9															
10-13 (10-11)	4,384	422	0.9												
13-16 (13-14)	5,790	488	1.0	381	11	5.7				12,450	467	4.5	6,142	266	3.9
16-20 (17-18)	5,857	506	1.0	991	40	2.1	6,962	459	2.5	16,227	484	5.6	12,341	396	5.2
20-23				16,863	463	3.0	13,040	495	4.4				1,724	72	6.0
26-30													8,342	429	4.9
27-28															
Totals	16,031	606	0.9	18,235	472	3.0	20,010	561	3.5	28,685	563	5.0	36,139	615	4.0
Associated Data															
Fishermen hours		16,922			6,102			5,724			5,706			9,030	
Days open to fishing											1/2			1.08	
2/		1 1/2			1 1/4			1/2							
Kuskokwim River Breakup (Bethel)		May 7			May 19			May 18			May 23				
Kuskokwim River Clear of ice		May 19			May 25			May 28			June 1				
First king salmon		May 23			May 26			June 1			May 31			May 18	
Smelt at Bethel		May 25			May 29						June 2			May 22	
First frost															
Freezeup at Bethel					Oct. 29			Oct. 27			Oct. 18			Oct 25	

1/ Open for only 12 hours

2/ One day is equivalent to 24 hours fishing time.

1979 Catch Boats C.F.H.

June

4-6

6-9

10-13 - - - 12,247 522 3.9

13-16 - - - 12,339 548 3.8

16-20

21-23

23-25

25-27

27-30

Totals 24,586

Associated Data

Fishermen hours - - 6,420

Days open to fishing

3/

1/2

Kuskokwim River

Breakup (Bethel)

Kuskokwim River clear of ice

First king salmon May 16

Smelt at Bethel

First frost

Freezeup at Bethel

11-15

Appendix Table 10 Total utilization of Kuskokwim River chum salmon, 1960-1978.^{3/}

Year	Commercial Catch <u>1/</u>	Subsistence Catch <u>2/</u>	Total Utilization
1960		327,297	327,297
1961		185,447	185,447
1962		165,626	165,626
1963		141,550	141,550
1964		189,660	189,660
1965		283,459	283,459
1966		174,660	174,660
1967	148	205,263	205,411
1968	187	260,023	260,210
1969	7,165	198,628	205,793
1970	1,664	245,550	247,214
1971	68,914	116,391	185,305
1972	78,619	120,316	198,935
1973	143,746	179,259	328,005
1974	171,887	277,170	449,057
1975	181,840	176,389	360,560
1976	177,864	227,765	405,629
1977	248,721	213,418	462,139
1978	248,656	131,049	379,705
1979	261,874	155,118	416,992
Previous 5 yr. average	185,812	214,800	400,612

1/ Subdistricts 335-10 and 335-20.

2/ Catches are expanded and include all villages surveyed each year, 335-10, 335-20 and 335-30 to the Swift River.

Appendix Table 13. Comparative commercial chum salmon catch data by fishing period during the chum salmon season
Kuskokwim River (subdistrict 1, statistical area 335-11), 1971-1978.

Fishing periods	1971			1972			1973			1974			1975			1976			1977			1978		
	Catch	Boats	C.F.H. ^{1/}	Catch	Boats	C.F.H.	Catch	Boats	C.F.H.	Catch	Boats	C.F.H.	Catch	Boats	C.F.H.	Catch	Boats	C.F.H.	Catch	Boats	C.F.H.	Catch	Boats	C.F.H.
June 25-27							19,073	202	7.9	27,017	267	116.9												
June 28-30	11,386	150	6.3	9,863	87	9.4	47,258	250	7.9				31,114	253	20.5	42,464	348	20.3	40,321	378	17.8	44,296	449	16.4
July 1-3	8,949	111		19,004	115	13.8	21,410	242	7.4	55,356	380	12.1	34,417	374	15.3	44,024	415	17.7	58,084	409	24.0	36,793	442	13.9
July 4-6	17,672	104		19,839	101	16.8	31,056	212	12.2	27,211	282	8.0							37,000	331	19.0	26,629	476	9.3
July 7-9	12,603	93					24,593	217	9.4	50,672	376	11.2	30,752	368	17.6	48,669	381	21.3	56,943	368	25.8	48,031	485	8.3
July 10-12	2,550	18		13,972	113	10.3							39,791	301	22.0	21,153	377	9.4						
July 13-15	8,000	69		6,290	80	6.5							20,945	329	10.6	14,176	265	8.9	24,765	305	10.7	48,531	428	9.5
July 16-18									6,661	190	5.8											14,135	422	5.9
July 19-21	5,989	71																						
Total	67,149	216	9.1	69,048	176	11.6	143,398	341	8.7	166,917	467	11.8	165,049	540	16.9	170,486	517	15.9	218,413	522	14.0	219,115	617	10.1
Associated Data																								
Fishermen hrs.																								
2/																								
Days open to fishing 3/																								

1/ Catch per fisherman hour.

2/ Number of fishermen multiplied by hours open to fishing.

3/ One day is equivalent to 24-hours of fishing time.

HOURLS June

6 22

6 26

6 29

6 7-3

6 7-10

1979
chum
catch

32 295

53 648

48 643

83,164

32,434

boats

502

531

542

542

520

Appendix Table 12. Comparative commercial coho salmon catch data by week, lower Kuskokwim River (subdistrict 1, stat. area 335-10) 1974-1978.

Date	1974				1975				1976				1977			
	Catch	Fisher- men	Fisher- man hrs.	C.F.H.	Catch	Fisher- men	Fisher- man hrs.	C.F.H.	Catch	Fisher- men	Fisher- man hrs.	C.F.H.	Catch	Fisher- men	Fisher- man hrs.	C.F.H.
Aug. 1-8	9,576	267	3,444	2.8	2,346	148	888	2.6	10,534	286	6,864	1.5	23,987	360	8,640	2.8
Aug. 9-15	59,090	444	31,968	1.9	12,171 ^{2/}	293	14,064	0.9	29,728	400	19,200	1.5	91,474 ^{3/}	487	23,376	3.9
Aug. 12-21	58,066	396	28,512	2.0	18,020	362	17,376	1.0	28,664	387	18,576	1.5	60,935	438	10,512	5.8
Aug. 19-29	12,301	263	18,936	0.6	33,128	387	18,576	1.8	14,543	300	14,400	1.0	25,589 ^{4/}	378	4,536	5.6
Aug. 26-Sep. 3	5,360	107	7,704	0.7	16,280	274	13,152	1.2	4,420	174	7,308	0.6	16,980 ^{5/}	361	4,332	3.9
Sep. 3-9	430	25	1,815	0.2									11,874 ^{6/}	264	3,168	3.8
													6,819 ^{7/}	204	2,448	2.8
Totals	144,823	516	92,879	1.2	81,945	533	64,056	1.3	87,889	516	66,348	1.3	237,658	572	57,012	4.2

1978			
Date	Catch	Fisher- men	Fisher- man hrs. C.F.H.
Aug. 1	6,311	297	3,564 1.7
Aug. 4	9,455	364	4,368 2.2
Aug. 8	20,501	433	5,196 5.5
Aug. 11	42,428	485	5,820 7.3
Aug. 15	48,950	476	5,712 8.6
Aug. 18	29,485	434	5,208 5.7
Aug. 22	22,287	396	4,752 4.7
Aug. 25	11,168	293	3,516 3.2
Aug. 29	12,215	250	3,000 4.1
Totals	210,790	597	41,136 5.2

3/ Aug 8-10 4/ Aug 18. 5/ Aug 22 6/ Aug 25. 7/ Aug 29

1979

Aug	Boat	Hrs	Coho
2	478	12	52,246
6	480	6	53,797
9	497	6	26,422
13	463	6	27,915
14	467	6	21,675
20	390	6	19,445
23	328	6	5,374
27	310	12	6,342
30	179	12	2,182

Appendix Table 13. Comparative Kuskokwim River king salmon subsistence catches by village, 1960-1978.

Village	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
Kwigillingok, Kipnuk,											
Kongiganak	250	283	54	229	414	01/	205	957	70	385	1,111
Eek	1,474 ^{3/}	2,238 ^{3/}	1,060 ^{3/}	2,697 ^{3/}	1,857	2,737	2,872	4,375	2,760	2,037	2,065
Tuntutuliak	226	2,226	842	2,853	1,826	1,978	3,061	3,338	2,026	2,195	3,558
Kasigluk	135	1,215	127	1,302	4/	513	1,875	2,766	1,360	2,888	3,931
Nunapitchuk	683	2,042	848	1,874	636	490	2,875	1,926	1,360	2,279	4,680
Atmauthluak ^{5/}											1,205
Napakiak	1,830	2,573	2,191	3,148	2,677	1,670	3,592	3,922	2,317	3,546	4,960
Oscarville	1,968	282	75	309	339	678	301	1,327	393	457	542
Napaskiak	536	1,258	759	1,569	2,201	1,412	2,935	3,091	1,647	2,227	3,446
Bethel	1,923	4,150	1,378	7,019	4,114	3,342	7,604	11,772	4,900	7,472	17,026
Kwethluk	2,692	3,763	2,329	5,050	3,262	4,538	6,135	6,889	3,549	3,187	7,932
Akiakchak	1,626	3,052	1,800	2,533	3,488	3,952	4,957	5,543	3,415	2,602	7,022
Akiak	1,865	3,159	906	2,869	2,495	1,774	3,941	3,790	1,332	1,275	3,290
Tuluksak	737	1,486	493	1,295	572	1,019	1,559	1,710	1,048	1,131	1,995
Lower Kalskag	961	571	805	2,661	710	841	1,918	1,733	1,463	2,083	2,146
Upper Kalskag	667	1,049	7/	7/	1,143	719	1,333	1,699	1,404	1,623	734
Aniak	1,057	688	185	602	1,104	494	2,002	1,415	467	1,406	2,136
Chuathbaluk	64	54	10	30	74	29	139	217	40	180	219
Napamute	20	16	44	52	134	2	78	60	100	19	22
Crooked Creek	747	518	561	859	1,358	363	1,249	638	77	541	684
Georgetown	10/	10/	10/	10/	10/	10/	12	10/	10/	9	2
Red Devil	10/	40	144	228	314	10/	182	10/	111	142	232
Sleetmute	465	222	9/	9/	9/	491	149	343	200	267	161
Stony River	435	25	31	67	299	101	632	364	191	2,187	105
Totals	20,361	30,910	14,642	37,246	29,017	27,143	49,606	57,875	30,230	40,138	69,204

Village	1971	1972	1973	1974	1975	1976	1977	1978	1960- 1973	1974- 1978
									Average	Average
Kwigillingok, Kipnuk	241	10	75	10/	10/	197	743	75	330	338
Kongiganak										
Eek	1,882	1,969	1,981	2,356	2,110	3,232	2,675	1,807	2,286	2,436
Tuntutuliak	1,841	3,214	2,859	1,577	3,492	4,807	2,470	1,656	2,289	2,800
Kasigluk	1,645	1,292	8,864	1,411	1,713	1,613	1,324	608	1,609	1,334
Nunapitchuk	1,970	2,496	2,663	1,165	2,092	2,578	2,622	2,178	1,916	2,127
Atmauthluak ^{5/}	548	864	1,106	382	1,042	1,159	1,015	966	931	913
Napakiak	1,868	2,009	1,763	1,224	2,864	3,330	2,702	2,140	2,719	2,452
Oscarville	570	196	586	180	891	623	672	349	573	543
Napaskiak	1,916	1,578	2,048	900	2,303	3,566	1,989	2,122	1,902	2,176
Bethel	8,731	8,371	8,898	4,631	11,688	13,215	9,409	6,905	6,907	9,169
Kwethluk	5,564	5,137	3,444	2,694	3,179	4,193	5,563	3,172	4,534	3,760
Akiakchak	4,818	3,872	2,592	1,726	3,534	4,915	5,407	2,951	3,662	3,707
Akiak	2,688	1,899	1,895	1,292	2,837	3,076	2,880	1,850	2,366	2,387
Tuluksak	1,280	1,318	1,322	883	1,338	1,411	2,906	1,906	1,212	1,689
Lower Kalskag	2,355	2,604	1,309	1,586	2,755	4,536	1,750	1,951	1,583	2,516
Upper Kalskag	601	401	938	463	1,752	1,431	2,813	1,253	1,026	1,542
Aniak	1,076	2,105	1,030	1,952	1,391	1,490	4,991	1,331	1,126	2,231
Chuathbaluk	179	261	942	674	594	657	1,507	1,238	174	934
Napamute	17	20	13	6	16	420	176	144	43	152
Crooked Creek	291	183	269	650	238	264	619	483	596	341
Georgetown	0	0	0	9/	10/	10/	66	10/	4	66
Red Devil	135	182	138	205	623	195	324	153	168	300
Sleetmute	181	69	504	269	256	356	684	456	277	404
Stony River	2,521 ^{11/}	95	287	439	861	653 ^{11/}	33	182	524	434
Totals	42,926	40,145	38,526	26,665	47,569	57,917	55,339	35,881	38,757	44,751

1/ Included with other villages.

2/ Does not include 1965.

3/ Estimates based on catch data through 1969.

4/ Included with Eek.

5/ Does not include 1964.

6/ New village of Atmauthluak segregated in 1970 from parent village of Nunapitchuk.

7/ Included with Lower Kalskag.

8/ Does not include 1962 and 1963.

9/ Included with Red Devil.

10/ Data not available.

11/ Includes Lime Village.

Appendix Table 14. Comparative Kuskokwim River "other salmon" subsistence catches by village, 1960-1970. ^{1/2/}

Village	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1960-1973 Average	1974-1978 Average
Kipruk, Kongiganak, Kwigillingok	1,430	3,279 ^{4/}	1,990	2,562	2,323	0	680	2,846	2,800	2,481	3,937	1,110	1,284	807	9/	9/	902	2,190	78	1,966	Average
Eek	4,094 ^{4/}	2,321	2,072 ^{4/}	1,771 ^{4/}	3,151	2,890	1,324	1,922	3,503	3,436	4,855	2,213	783	2,401	4,227	2,754	4,425	3,251	1,874	2,625	1,056
Tuntutuliak	4,101	8,526	9,692	6,791	8,421	18,993	9,747	11,531	14,090	17,462	10,600	9,964	11,103	13,572	28,321	7,429	8,440	9,340	5,564	11,042	11,019
Kasigluk	1,400	3,657	1,705	1,020	5/	4,041	3,058	2,309	4,311	3,308	5,731	2,043	1,934	6,090	6,773	3,700	4,050	3,504	1,242	3,124	3,055
Munapitchuk	2,743	4,068	7,474	2,462	1,171	4,251	4,145	6,270	7,731	6,934	11,412	3,375	5,600	7,663	12,498	5,447	6,551	8,991	4,977	5,436	7,963
Atmauthluk											1,191	1,197	947	2,818	4,585	2,524	3,446	3,693	3,060	1,538	3,622
Napaklak	19,808	5,789	6,167	3,711	12,312	12,928	9,275	12,685	12,700	12,390	16,371	4,427	5,191	8,461	21,494	11,630	9,477	8,420	6,074	10,164	11,419
Oscarville	3,948	1,680	1,723	1,025	487	8,010	407	2,580	2,104	2,743	4,669	1,675	498	3,081	5,617	3,237	2,416	2,030	1,276	10,164	11,419
Hapostlak	5,199	4,286	5,546	3,584	6,275	26,206	8,743	8,585	12,409	11,655	11,169	7,039	8,858	8,478	20,467	12,930	21,518	11,508	9,206	9,145	15,168
Bethel	12,972	12,845	8,470	8,623	15,623	19,099	14,011	14,055	28,603	14,613	33,475	9,905	18,885	31,930	34,892	26,808	26,970	15,982	13,731	17,365	23,677
Kwethluk	32,975	21,106	22,708	13,188	19,186	37,780	18,707	23,872	36,645	23,462	27,702	13,941	11,721	19,565	39,747	19,183	27,120	28,193	14,038	23,046	25,655
Akiakchak	15,932	12,510	10,521	6,725	10,096	25,138	15,049	13,584	19,461	10,306	29,776	12,298	9,266	9,864	15,108	14,008	16,050	18,607	9,445	14,324	14,644
Akiak	13,061	8,205	6,551	8,478	9,659	12,297	10,622	9,332	13,775	9,854	13,003	9,264	5,108	6,118	18,434	10,890	12,337	13,952	9,237	14,324	14,644
Tuluksak	19,261	7,928	8,526	10,285	9,777	12,820	11,670	8,898	11,114	6,058	7,628	5,115	5,145	5,948	13,261	7,818	11,833	7,835	4,478	9,666	14,570
Lower Kalskag	11,563	7,764	16,478	23,249	9,472	21,906	10,346	16,018	8,114	8,468	11,150	3,609	3,490	2,873	12,265	9,823	17,169	8,964	3,704	11,029	10,305
Upper Kalskag	38,398	27,149	7/	7/	11,391	11,970	6,236	8,364	9,733	9,413	5,309	3,530	1,460	5,607	9,631	6,904	8,694	11,045	7,279	11,547	8,871
Aniak	36,673	15,935	10,120	10,600	17,874	11,353	12,484	16,788	17,341	15,127	10,030	4,933	5,243	13,547	9,305	9,697	13,507	21,610	8,042	14,147	12,412
Chustabakuk	22,370	2,922	3,784	2,629	5,059	6,507	5,625	7,249	11,508	7,523	10,971	5,632	8,509	14,171	4,287	561	7,967	5,141	4,805	8,181	4,568
Napamute	11,017	6,236	3,898	5,192	4,873	784	3,704	5,750	1,774	1,453	1,224	1,062	4,645	3,451	76	226	1,653	4,969	1,887	3,984	1,762
Crooked Creek	41,263	17,558	27,259	23,166	32,550	18,986	19,467	14,365	12,704	6,810	9,216	3,094	3,658	1,901	4,954	2,461	3,236	3,072	2,469	16,577	3,230
Georgetown	9/	9/	9/	9/	9/	70	70	9/	2,030	3,664	800	0	0	10	9/	9/	9/	1,127	9/	9/	1,127
Red Devil	9/	1,350	9,007	5,367	5,706	9/	2,746	9/	2,400	1,130	2,454	1,067	1,695	2,782	2,688	4,481	4,231	6,916	6,161	3,246	1,127
Sleetmule	17,259	6,804	10/	10/	11,707	2,611	6,875	11,216	8,258	4,464	3,203 ^{11/}	4,293	2,168	4,212	5,761	7,628	6,674	6,674	7,917	7,176	6,439
Stony River	13,750	2,642	1,855	1,110	4,254	15,865	3,933	11,377	13,875	12,080	8,407	5,995	3,000	3,875	4,328	5,202	8,484 ^{11/}	3,900	3,545	7,144	4,972
Totals	327,297	185,447	185,626	141,550	189,660	283,459	174,660	205,263	260,823	198,628	245,550	116,391	120,316	179,258	277,170	176,389	228,104	210,194	131,049	205,183	207,171

1/ Catches include a majority of chin salmon but include small numbers of red, coho, pink and small king salmon.

2/ 1965 to 1972 catches do not include late coho salmon catches.

3/ Does not include 1985.

4/ Estimate based on catch data through 1970.

5/ Included with Eek.

6/ Does not include 1964.

7/ Included with Lower Kalskag.

8/ Does not include 1962 and 1963.

9/ Data not available.

10/ Included with Red Devil.

11/ Includes Lime Village.

Appendix Table 15. Comparative subsistence fishing data between families owning and not owning snowmachines, Kuskokwim River, 1967-1978. 1/

Year	Families	People	Dogs	Snow- machines	Average per family				Other Salmon	Percent family with snowmach
					People	Dogs	Snow- machines	Kings		
1967										
With snowmachine	59	410	280	63	6.95	4.88	1.07	143	355	14
Without snowmachine	359	2,264	1,963	0	6.31	5.47	0	101	404	
1968										
With snowmachine	159	1,100	808	182	6.92	5.08	1.14	70	382	30
Without snowmachine	374	2,247	2,052	0	6.01	5.49	0	51	493	
1969										
With snowmachine	158	1,097	876	189	6.94	5.54	1.20	78	306	46
Without snowmachine	191	1,208	1,173	0	6.32	6.14	0	71	425	
1970										
With snowmachine	287	1,962	1,413	375	6.84	4.92	1.31	121	380	68
Without snowmachine	212	1,201	972	0	5.66	4.58	0	87	413	
1971										
With snowmachine	361	2,459	1,504	494	6.79	4.16	1.37	89	243	74
Without snowmachine	128	734	601	0	5.73	4.70	0	84	278	
1972										
With snowmachine	278	2,096	949	385	7.54	3.41	1.38	76	220	77
Without snowmachine	85	500	328	0	5.98	3.86	0	48	247	
1973										
With snowmachine	343	2,246	1,375	506	6.55	4.00	1.48	79	362	81
Without snowmachine	81	429	283	0	5.15	3.49	0	47	254	
1974										
With snowmachine	337	2,153	1,339	491	6.39	3.97	1.46	47	495	88
Without snowmachine	68	350	158	0	5.15	2.32	0	29	342	

Appendix Tab 5. Comparative subsistence fishing data between families owning and not owning snowmachines, Kuskokwim River, 1967-1978. 1/ (Continued)

Year	Families	People	Dogs	Snow- machines	Average per Family					Percent Families with snowmachine
					People	Dogs	Snow- machines	Kings	Other Salmon	
1965										
With snowmachine	313	2,029	1,252	482	6.55	4.00	1.54	79	309	84
Without snowmachine	59	313	126	0	5.30	2.13	0	62	301	
1966										
With snowmachine	416	2,815	1,578	607	6.77	3.79	1.46	91	340	81
Without snowmachine	78	410	302	0	5.26	3.87	0	60	306	
1967										
With snowmachine	435	2,829	1,712	674	6.50	3.94	1.55	91	287	86
Without snowmachine	59	303	187	0	5.14	3.17	0	59	201	
1968										
With snowmachine	476	3,025	2,203	725	6.36	4.63	1.52	64	180	85
Without snowmachine	83	450	303	0	5.42	3.65	0	37	165	

Unexpanded data.

Appendix Table 16. Comparative Kuskokwim River Subsistence Fishery Data, 1960-1978^{4/}.

Fishing Families Surveyed		Average Numbers per Fishing Family					Fishwheels
		People	Dogs	Snow- Machines	King Salmon	Small Salmon ^{3/}	
1960	247	5.89	6.66		60	1,074	-
1961	342	6.02	6.33		39	453	.19
1962	349	6.50	6.30		79	470	.18
1963	405	6.14	5.29		87	351	.11
1964	394	6.33	5.44		70	454	.10
1965	332	5.95	5.45		64	669	.08
1966	492	5.91	4.49	1/	91	320	.06
1967	472	6.36	5.22	.18	106	375	.06
1968	567	6.23	5.31	.35	53	447	.06
1969	376	6.49	5.51	.53	78	385	.05
1970	514	6.33	4.65	.75	108	384	.02
1971	488	6.53	4.30	1.01	88	238	.01
1972	576	6.78	3.08	1.00	51	166	.02
1973	408	6.55	3.84	1.48	81	356	.02
1974	596	6.24	3.61	1.12	45	466	.02
1975	437	6.41	3.99	1.35	79	310	.02
1976	494	6.53	3.81	1.23	86	335	.02
1977	502	6.33	3.83	1.36	89	309	.02
1978	613	6.02	4.29	1.24	53	190	.01
1979	696	5.99	4.18	1.34	67	183	.01

1/ Snowmachine count started in 1967.

- Information not available.

^{3/} Does not include coho salmon.^{4/} Unexpanded data only.

Appendix Table 17. Comparative Quinhagak Subsistence Fishery Data, 1967-1978 ^{4/}

Year	Total Fishing Families	People	Dogs	Averages per Fishing Family					
				Snow- machines	King Salmon	"Dog" Salmon	Coho Salmon	8-1/2" Nets	5-1/2" Nets
1967	19	6.43	4.00	-	71	231	-	.86	1.00
1968	46	5.59	4.07	.28	88	234	380	.48	.54
1969	59	5.38	3.41	.46	27	29	179	.72	.28
1970	46	6.02	2.76	.74	47	110	-	.64	.69
1971	41	5.83	2.37	.73	55	87	36	.54	.73
1972	54	6.41	2.30	.80	56	116	9	.44	1.00
1973	44	5.80	2.07	.98	61	98	83	1.02	.98
1974	47	5.53	2.31	1.17	46	78	87	.63	.74
1975	46	5.86	1.85	1.13	71	88	-	1.00	.93
1976	50	5.62	2.2	1.42	44	119	-	.84	1.24
1977	60	6.63	1.59	1.42	34	70	-	-	-
1978	65	5.59	1.86	1.70	36	96	3	.51	.87
1979	48	5.23	1.72	1.66	29	23	37	-	-

^{4/} Expanded data.

Appendix Table 18: Comparative Kuskokwim River drainage king salmon escapement counts 1970-1978 1/2/

Kwethluk River				Kisaralik River					
Year	Estimated Count	Area Surveyed ^{3/}	Survey Rating	Year	Estimated Count	Area Surveyed	Survey Rating		
1960	1,320	Upper 40 miles	?	1960	1,104	Entire	Fair		
?	248	Entire	Poor	1962	327	Entire	Poor		
?	516	Upper 35 miles	Fair	1965	194	Below canyon	Poor		
1968	800	Entire	Fair	1966	204	Upper 60 miles	Poor		
1972	68	Upper 20 miles	Poor	1968	487	Upper river	Fair		
1974	88	Upper 30 miles	Poor	1970	531	Airstrip to Quicksilver Cr.	Fair		
1975	Few	Lower 40 miles	Poor	1973	152	Airstrip to 1 mi. above falls	Fair		
1976	997	40 mi. d.s. from mouth of Canyon Cr.	fair	1974	4	Airstrip to 30 mi. upstream	Poor		
1977	1,999	3-step Mt. to Canyon Creek	fair	1975	129	Entire	Poor/Fair		
1978	1,276	3-step Mt. to Canyon Creek	fair	1976	873	10 mi. below foothills to lake	Fair		
				1978	2,417	Airstrip to lake.	Fair		
Aniak River ^{4/}				Aniak River (above Salmon River)					
Year	Estimated Count	Area Surveyed	Survey Rating	Year	Estimated Count	Area Surveyed	Survey Rating		
1960	1,881	Entire	Fair	1966	485	Salmon R. to lake	Fair		
1961	497	Entire	Fair	1967	758	Salmon R. to lake	Poor		
1962	925	Entire	Fair	1968	783	Salmon R. to lake	Good		
1965	646	1 mile 20 to lake	Poor	1969	537	Salmon R. to lake	--		
1966	2,184	Buckstock R. to lake	Fair	1970	592	Salmon R. to Waterboot Cr.	Fair		
1968	1,420	Buckstock to Kipchuk River	Fair	1971	144	Waterboot Creek to Aniak Lake	Poor		
1970	1,231	20 mi. below Salmon R. to Waterboot Creek	Fair	1972	93	Salmon R. to lake	Poor		
1974	196	Entire	Poor	1973	200	Salmon R. to lake	Poor		
1975	202	Entire	Fair	1974	57	Salmon to lake	Poor		
1976	281	Kipchuk River to Gemuk Mt.		1975	145	Salmon to lake	Fair		
				1976		No Information Available			
				1977	21	5 mi. below lake to canyon below Gemuk Mt.	Fair		
				1978	140	Salmon River to lake	Good		
Salmon River				Kipchuk River					
Year	Estimated Count	Area Surveyed	Survey Rating	Year	Estimated Count	Area Surveyed	Survey Rating		
1960	223	Entire	Good	1960	513	Entire	Good		
1966	141	Lower 25 miles	Poor	1966	491	Lower 22 miles	Good		
70	381	Lower 25 miles	Fair	1967	200	Lower 25 miles	Poor		
?	43	Entire	Poor	1968	319	?	Fair		
73	100	Mouth to Cripple Cr.	Poor	1970	821	Mouth-Cripple Creek	Fair		
1974	35	Entire	Good	1974	73	Entire	Good		
1975	32	Entire	Fair	1975	94	Entire	Fair		
1976	86	mouth to Marvel Creek	Poor	1976	177	mouth to Big Bend	Fair		
1977	625	mouth to Marvel Creek	Fair	1977	16	5 mi. from canyon downstream	Poor		
1978	322	Entire	Fair	1978	187	Lower 25 miles	Poor		
Chukowan River				Kogrukuk River					
Year	Estimated Count	Area Surveyed	Survey Rating	Year	Tower Count	Weir Count	Aerial Survey Count	Area Surveyed	Survey Rating
1966	986	Mouth-Gemuk River	Good	1961			214	Entire	Fair
1968	1,260	Mouth-Gemuk River	Fair	1966			1,645	Entire	Good
1970	1,118	Mouth-Gemuk River	Good	1967			1,033	Entire	Poor
1972	163	Mouth-Gemuk River	Poor	1968			2,180	Entire	Fair
1973	229	Mouth-Gemuk River	Fair	1969	2,980				
1975	667	Mouth-Gemuk River	Fair	1970	3,868 ^{5/}		1,598	Entire	Fair
			Fair	1971	42 ^{5/}		636	Headwater to 15 mi above mouth	Poor
				1972	1,934		476	Entire	Fair
				1973	1,725		610	Entire	Poor
				1974	3,724				
				1975	1,970		1,062	Entire	Fair
1976	727	Entire	Fair	1976	3,261	5,507	518	tower to Maka Creek	fair
1978	1,064	Mouth to Enatalik Creek	Good	1977	1,988	1,385 ^{5/}	1,342	Entire	
				1978	7,405	13,132			

1/ All counts are from aerial surveys, except tower counts which are in parenthesis.

2/ Aerial survey counts were made only in main stem of each river listed.

3/ "Entire" usually does not include several miles of the lower sections of streams where turbid water conditions prevent observation of fish.

4/ Includes Aniak River above Salmon River.

5/ Count is very low due to water conditions.